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ALUMINUM – TITANIUM – SPECIALTY STEELS

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January 15, 2015

United States Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140  
Attn: Ravi Sanga

**SUBJECT: SUPPLEMENTAL REMOVAL ACTION COMPLETION REPORT  
JORGENSEN FORGE OUTFALL SITE  
SEATTLE, WASHINGTON  
CERCLA DOCKET NO. 10-2011-0017, SECOND MODIFICATION**

Dear Mr. Sanga:

This report has been prepared on behalf of Jorgensen Forge Corporation (JFC) and The Boeing Company (Boeing) (together as JFC/Boeing) pursuant to the *Second Modification to the Administrative Order on Consent for Removal Action (Order) at the Jorgensen Forge Outfall Site* (Second Modification; EPA 2013), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Docket No. 10-2011-0017, signed by JFC, Boeing, and the U.S. Environmental Protection Agency (EPA) on June 25, 2013 (EPA 2010).

The purpose of this Supplemental Removal Action Completion Report is to document the final work completed under the Order's Second Modification and describe variances, if any, from plan. The work documented in this report includes the extraction, decontamination, and interim storage of the steel sheet piling (SSP) panels used to construct the cofferdam structure. Installation of the cofferdam structure itself was documented to EPA in the *Interim Removal Action Report - Cofferdam Installation* by SoundEarth Strategies, Inc. (SoundEarth), dated April 7, 2014. Specifically, this report describes in the general order of occurrence:

- The extraction of SSP panels following work by Earle M. Jorgensen (EMJ) in the SSP cofferdam;
- Measures undertaken to decontaminate the black residue that formed on the upper portion of the SSP inside the cofferdam;
- Sampling of the silty-sand material that adhered to the bottoms of the extracted SSP panels;
- The staging of extracted SSP panels inside the Jorgensen Forge Outfall Site (JFOS) project area; and,

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- Current and proposed actions and temporary storage measures for the extracted SSP panels in consideration of the Third Modification to the Order.

## **SHEETPILE EXTRACTION**

Following installation of the cofferdam structure in February 2014 (as described in the JFOS Interim Completion Report), in-water dredging of contaminated bank sediment and subsequent backfill placement in the cofferdam was performed by EMJ contractor Pacific Pile & Marine (PPM) in mid-August 2014. During this work an oily sheen observed on the water surface within the cofferdam led to the formation of a one- to two-foot high patchy band of black residue near the top of the inward-facing SSP cofferdam walls. Rapid backfilling by EMJ/PPM caused overtopping of the cofferdam walls and loss of some of the sheen to the Waterway. A sample of the sheen collected downstream from the cofferdam by EMJ and the results were reported to EPA in connection with Jorgensen Forge Early Action Area (JFEAA) project, under EPA Docket No. 10-2013-0032.

Following backfilling, SSP extraction was expedited by the same contractor PPM, working for JFC/Boeing, in order to quickly vacate the area and minimize interference with EMJ project work. Accordingly, the three in-water SSP walls of the cofferdam were extracted between August 28 and 30 by PPM using a barge-mounted crane and transferred to a dredge spoils barge made available by the EMJ/PPM project team. On-shore decontamination was not an option due to EMJ's concurrent removal action project.

The extraction process began with an SSP panel extracted from the middle of the west cofferdam wall, and included the use of a hydraulic vibratory hammer to first pull each SSP panel up approximately 40 feet to a point where the bottoms of the panels were seated approximately 10 to 15 feet below the mudline of the backfill. At this height, friction at the spline interlock between the SSP panels was sufficient to minimize the extent to which a partially extracted panel would sink back down through the backfill, while still allowing the vibratory hammer to be removed. The extraction tooling was changed out on the crane, and a device with lifting plugs was attached to the top of the SSP, with the panel settling several feet under its own weight during the equipment change. With lifting plugs in place, the panel was then lifted clear of the adjacent SSP panels in the cofferdam wall and placed on the adjacent barge, where decontamination of the black residue was performed. The equipment change is evident in the amount of silty sand material visibly adhered to the lower portions of the SSP panels. The three in-water cofferdam walls were removed, and the east, upland wall of the cofferdam was left in place in preparation for future implementation of an upland removal action under the Third Modification. Photographs of the SSP panel extraction process are included in Appendix A.

## **DECONTAMINATION AND SAMPLING OF BLACK RESIDUE**

During in-water dredging of bank sediment, a black residue about two feet in height formed at the waterline on the inside faces of the cofferdam. To decontaminate the residue on the SSP prior to storage, each SSP panel bottom was positioned by crane on the barge bottom and then laid down on timbers. The black residue band was decontaminated by wiping the residue using a solvent-soaked rag. After decontamination, one sample was taken from a representative panel from each in-water SSP wall, for a total of three samples. SoundEarth collected the samples in accordance with SoundEarth's *Sampling and Analysis Procedures for Sheetpile Residue Memorandum* dated August 7, 2014, and e-mail correspondence between JFC and EPA dated August 21, 2014. (A sample of the residue prior to decontamination was not collected in the mistaken belief that only post-decontamination samples would be of interest.)

PCB concentrations in the wipe samples ranged from 48 to 209 micrograms per 100 square centimeters ( $\mu\text{g}/100\text{ cm}^2$ ), indicating some contamination remained from the residue, which, following cleaning, had the appearance of a faded black stain on the extracted SSP. Results are summarized on Table 1. Laboratory reports are included in Appendix B. A data validation report is included in Appendix C.

Decontamination of the black residue on the upland SSP wall that remains in place was performed when access to the residue was available from the backfilled bank surface exposed at low tide. On September 10, SoundEarth collected a pre-decontamination wipe sample (SSP-E\_20140910) of this residue. A second wipe sample (SSP-C-20140912) was taken by Soundearth on September 12 after PPM performed further decontamination of the residue. Given the prior results of the in-water SSP residue, greater emphasis was given on the decontamination process, which was made more difficult by the residue being on the vertical face of the SSP. The pre-decontamination wipe sample indicated PCBs were present in the residue at  $1,160\text{ }\mu\text{g}/100\text{ cm}^2$ , and the post-decontamination sample results indicated that decontamination reduced PCB concentrations in the black residue area to  $61\text{ }\mu\text{g}/100\text{ cm}^2$ . Immediately following collection of the post-decontamination sample, EMJ/PPM completed the placement of backfill material on the bank against the remaining SSP wall.

#### **UPLANDS STAGING OF EXTRACTED SSP PANELS**

Following SSP decontamination on the barge, PPM transferred the SSP panels to the JFOS boundaries behind (landward of) the upland SSP wall. PPM placed the extracted SSP panels on timbers in two stacks and double-wrapped the panels in 20 mil plastic sheeting with straw wattles as a temporary isolation protective measure. Black plastic is scheduled to be placed over the existing plastic sheeting during the week of 6-10 October and tied down in the same configuration. Placement of the SSP panels inside the JFOS boundary was coordinated with and approved by EPA following concerns raised by the EMJ project team that SSP stored in that area might interfere with the EMJ project. Placement in this area met multiple objectives by minimizing time otherwise necessary for SSP transport from PPM's barge to the closest available and suitable upland area, minimizing the potential for cross-contamination with the EMJ project area, and minimizing possible schedule impacts on the EMJ project given that PPM resources had to simultaneously support both the EMJ and JFC/Boeing projects.

#### **SAMPLING OF ADHERED SILTY-SAND MATERIAL**

A relatively small amount of silty sand that had variably adhered to the bottom two or three feet of the SSP during extraction was noted by EPA following stacking in the JFOS area. Upon closer inspection, this material was discontinuous (spotty) in coverage and forming a thin veneer with the visual appearance of concrete but that easily scraped off where present. EPA requested a plan be submitted to sample the adhered material. JFC/Boeing miscommunicated EPA's request to SoundEarth, however, such that SoundEarth instead sampled the material from a flat surface on September 11 and from the spline of an SSP panel on September 12. Photographs #7 through #15 in Appendix A feature the SSP panel surfaces where samples were collected. Each sample was collected by scraping the adhered material into a sample jar.

The total PCB concentration in the flat SSP surface sample was  $6.4\text{ mg/kg}$ . The total PCB concentration in the SSP spline sample was  $13.3\text{ mg/kg}$ . In attempting to construct a conceptual site model to explain these results, it may be significant to note that the total PCB concentration in the post-dredge, pre-backfill sample collected by EMJ from the bottom of the cofferdam was approximately  $13\text{ mg/kg}$  (reported under separate cover in connection with the JFEAA Removal Action Completion Report), and the Aroclor mixture between the samples is also closely comparable.

It is suggested that if EPA desires further sampling of this material to ensure proper documentation, the temporary plastic shroud over the SSP would be peeled back to allow access for sampling, after which the final coverings would be installed for storage over the winter as described below.

#### **TEMPORARY PROTECTIVE STORAGE MEASURES AND PROPOSED INTERIM STORAGE PLAN**

The storage location of the SSP panels within the JFOS is on industrial property with suitable restricted access. The SSP panels are on timbers to limit contact with the ground surface, and the stacks are temporarily covered with double layer 20 mil clear plastic sheeting to prevent contact with rainfall while final protective measures are planned with EPA. The plastic sheeting is weighted with dunnage and sandbags, and the downgradient perimeter is circled with straw wattles to control the flow of stormwater off the covered SSP stacks.

JFC/Boeing intend to cover the material with an additional layer of black reinforced plastic to provide resistance to UV degradation, and maintain the area including the plastic and straw wattles throughout the winter until that area is remediated in 2015 by JFC/Boeing in anticipation of the pending Third Modification to the JFOS Order.

#### **JFOS ORDER THIRD MODIFICATION IMPLEMENTATION**

It is anticipated the last activity required under the JFOS removal action will be in support of the excavation and proper disposal of PCB-contaminated soil, including that presently under the stored SSP panels. JFC/Boeing commit to this action in 2015 following execution of the Third Order Modification. Reuse of the extracted SSP panels is likely for this activity pending the finalization of the shoring and excavation design, which is currently underway by JFC/Boeing.

JFC/Boeing suggest that should EPA determine the extracted SSP panels must be fully decontaminated before such reuse, the SSP would most appropriately be decontaminated as required as part of JFOS field mobilization in 2015. Decontamination at that time would be accomplished in accordance with 40 CFR Chapter 1, Subpart R, Part 761, Subpart D, Section 761.79, Decontamination Standards and Procedures for PCBs, followed by necessary sampling and disposal consistent with TSCA requirements. It is suggested the means proposed above by which the extracted SSP panels would be stored and prepared for reuse represent a suitably conservative approach for managing the human and environmental safety, risks and issues involved.

#### **RISK-BASED DETERMINATION FOR RESIDUAL PCB CONCENTRATIONS AND THIRD MODIFICATION WORK**

PCBs are regulated under TSCA in addition to their regulation under other statutes. Under TSCA a Risk-Based Disposal Approval (RBDA) is an available option for cleanup of PCB remediation waste when the self-implementing cleanup and disposal standards of §761.61(a), or the performance-based disposal requirements of §761.61(b), are not appropriate or suitable. As part of the Third Modification to the JFOS Order, JFC and Boeing anticipate extensive coordination with EPA to determine the most appropriate compliant approach to remaining JFOS work.



## REFERENCES

U.S. Environmental Protection Agency (EPA). 2010. Administrative Order on Consent for Removal Action, Jorgensen Forge Outfall Site, with Jorgensen Forge Corporation, Boeing Company, and EPA. CERCLA Docket No. 10-2011-0017. November 9.

\_\_\_\_\_. 2013. Second Modification for Administrative Order on Consent for Removal Action, Jorgensen Forge Outfall Site, with Jorgensen Forge Corporation, Boeing Company, and EPA. CERCLA Docket No. 10-2011-0017. June 25.

Sincerely,

  
Miles Dyer  
Jorgensen Forge Corporation

Digitally signed by william.d.ernst@boeing.com  
DN: cn=william.d.ernst@boeing.com  
Date: 2015.01.15 07:36:04 -08'00'

William D. Ernst  
The Boeing Company

**ATTACHMENTS:** Table 1 – Summary of SSP Residue Sample Analytical Results  
Appendix A – Photographs  
Appendix B – Laboratory Analytical Reports  
    *Analytical Resources, Inc. Report No. YY33, dated Sept. 16, 2014*  
    *Analytical Resources, Inc. Report No. YZ49, dated Sept. 23, 2014*  
    *Analytical Resources, Inc. Report No. YY75, dated Sept. 23, 2014*  
    *Analytical Resources, Inc. Report No. ZA03, dated Sept. 26, 2014*  
    *Analytical Resources, Inc. Report No. ZA04, dated Sept. 26, 2014*  
Appendix C – Data Validation Report

**TABLE**

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TABLE 1  
SUMMARY OF SSP RESIDUE SAMPLE ANALYTICAL RESULTS  
JORGENSEN FORGE OUTFALL SITE  
SECOND MODIFICATION, PHASE 4A  
SEATTLE, WASHINGTON  
CERCL DOCKET NO. 10-2011-0017

RESIDUE WIPE SAMPLES				
SAMPLE ID	DATE	LOCATION	SAMPLES COLLECTED BEFORE/AFTER DECONTAMINATION	TOTAL PCBs <sup>(1)</sup> (µg/100 cm <sup>2</sup> )
SSP-W-20140829	8/29/2014	WEST WALL OF COFFERDAM	AFTER	87
SSP-S-20140829	8/29/2014	SOUTH WALL OF COFFERDAM	AFTER	209
SSP-N-20140829	8/29/2014	NORTH WALL OF COFFERDAM	AFTER	48
SSP-E-20140910	9/10/2014	EAST WALL OF COFFERDAM	BEFORE	1,160
SSP-C-20140912	9/12/2014	EAST WALL OF COFFERDAM	AFTER	61

SOLID SAMPLES				
SAMPLE ID	DATE	LOCATION	SAMPLES COLLECTED BEFORE/AFTER DECONTAMINATION	TOTAL PCBs <sup>(1)</sup> (µg/kg dry wt)
SSP-SOLIDS-20140911	9/11/2014	FACE, BOTTOM OF EXTRACTED SSP PANEL	AFTER	6,400
SSP-SOLIDS-20140912	9/12/2014	SPLINE, BOTTOM OF EXTRACTED SSP PANEL	AFTER	13,300

**NOTES:**

Laboratory analysis by Analytical Resources, Inc. of Tukwila, Washington

<sup>(1)</sup>PCBs by EPA Method 8082A, Nine Aroclors (1016, 1242, 1248, 1254, 2160, 1221, 1232, 1262, and 1268)

**ABBREVIATIONS:**

PCBs = Polychlorinated biphenyls



**APPENDIX A**  
**PHOTOGRAPHS**

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Photograph 1. Using vibrating hammer to extract SSP panels from the south cofferdam wall. Viewing southwest.



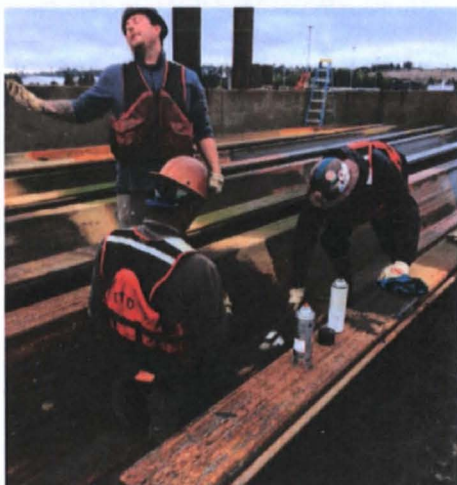
Photograph 2. Extracting SSP panels from the southwest, in-water side of the former cofferdam. Viewing north.



Photograph 3. SSP being laid onto the decontamination barge by lifting plugs, without the vibrating hammer.



Photograph 4. Staging extracted SSP panels on the decontamination barge for cleaning.

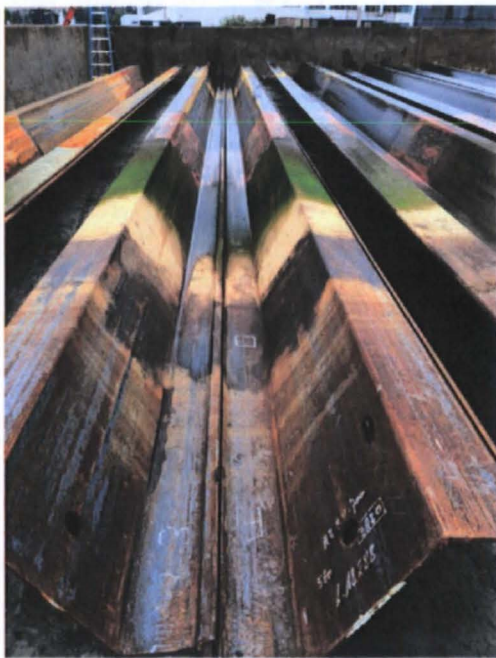


Photograph 5. PP&M crew on the decontamination barge, scrubbing the black residue zone on an SSP panel.

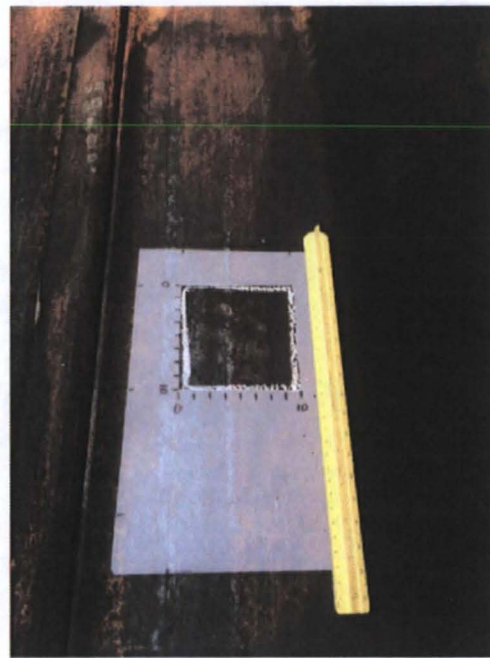


Photograph 6. SSP panel on decontamination barge. Note face and spline at top of SSP panel are free of bank material.





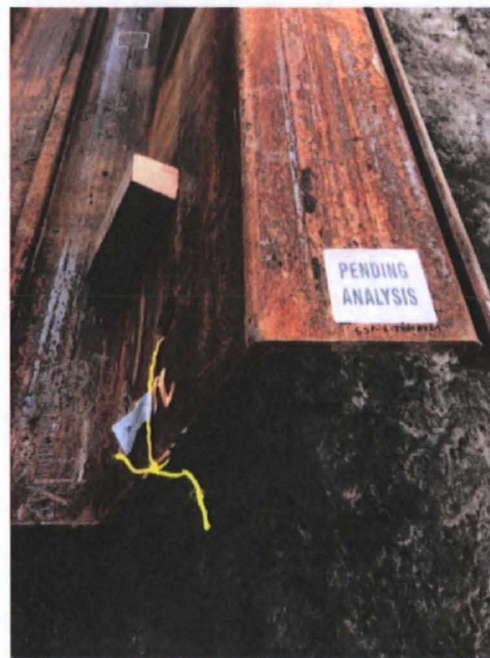
Photograph 7. Chalk-mark indicates location of residue wipe sample and black residue, relative to top edge of panel.



Photograph 8. Marking the residue wipe sample area. Note spline is free of bank material.



Photograph 9. Close-up view of SSP wipe sample (SSP-N-20140829).

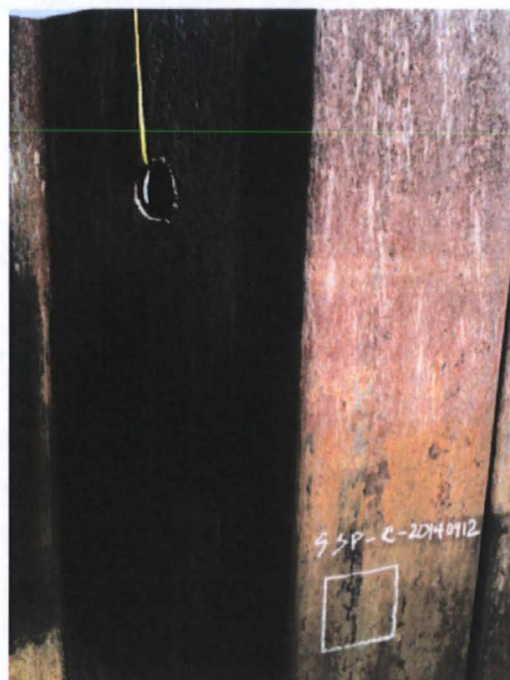


Photograph 10. SSP wipe sample location in background along with redundant labeling. Note spline is free of bank material.

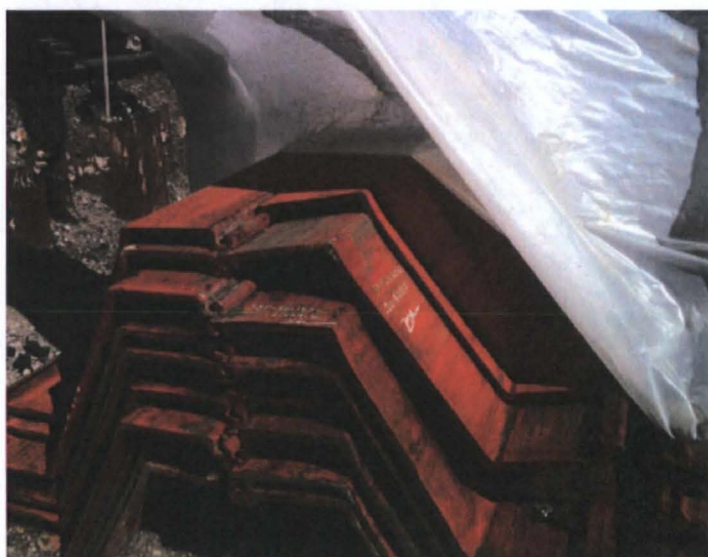




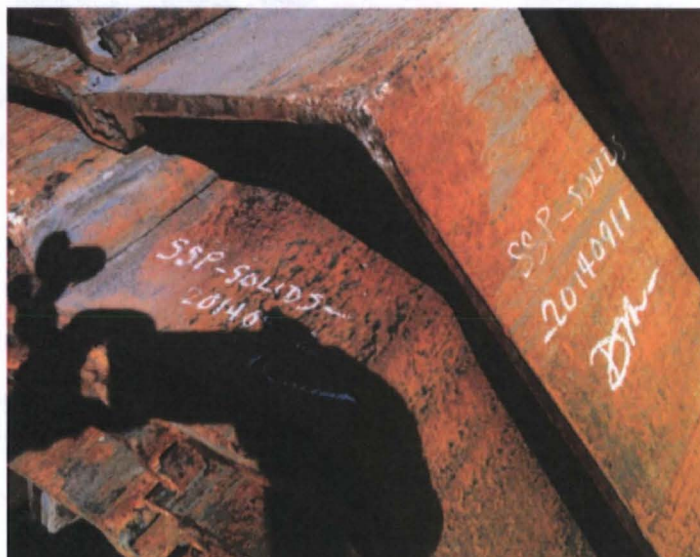
Photograph 11. Chalk-mark outlines 100 cm<sup>2</sup> area of residue sample SSP-E-20140910, on the east SSP wall (PRE-Decon).



Photograph 12. Chalk-mark outlines 100 cm<sup>2</sup> area of residue sample SSP-C-20140912, on the east SSP wall (POST-Decon). Outline of PRE-decon sample location visible in shadow at left.

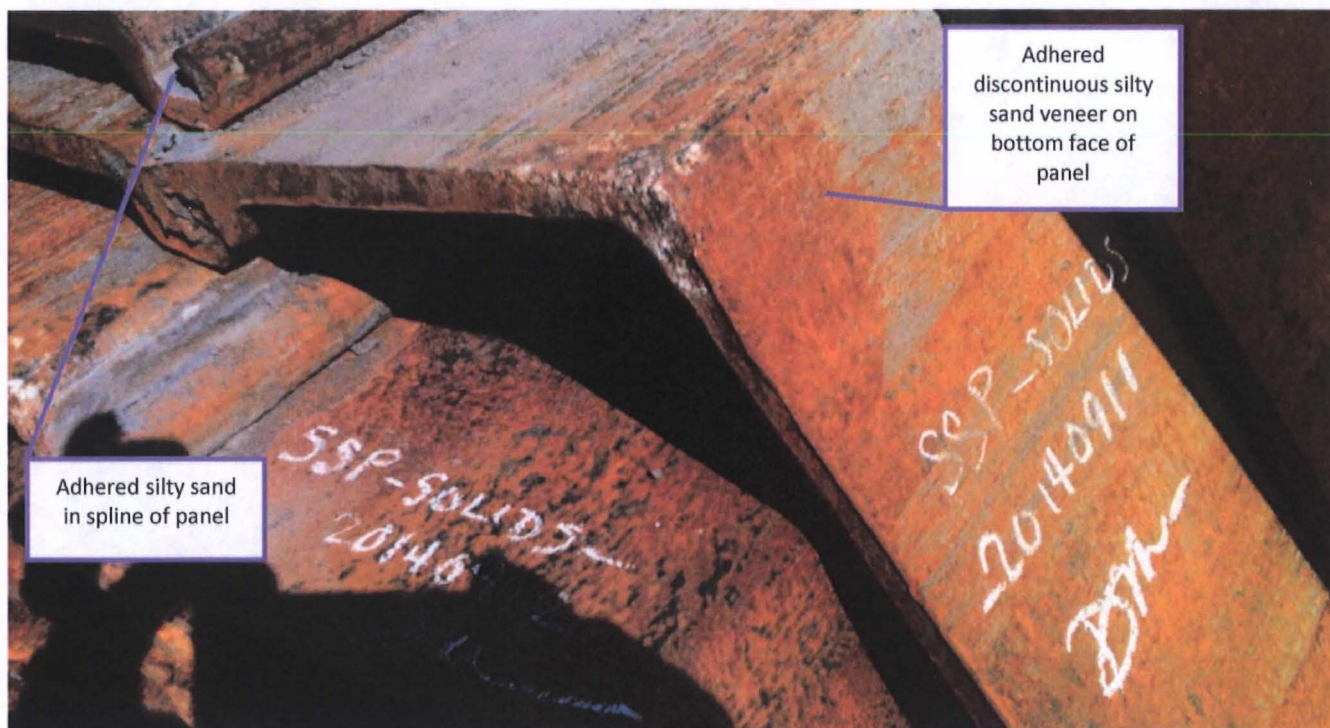


Photograph 13. Bottoms of decontaminated SSP panels staged on dunnage and under plastic at JFOS. Sample areas marked with chalk.



Photograph 14. Close-up of Photograph 9 showing silty sand material at sample locations SSP-SOLIDS-2014-0911 and spline sample area SSP-SOLIDS-20140912.





Photograph 15. Close-up photograph of sample locations SSP-SOLIDS-20140911 (veneer/crust) and SSP-SOLIDS-20140912 (spline). Silty sand material forms discontinuous veneer at bottoms of extracted SSP panels. Material adhered in spline was gouged out to collect sample for analysis.



Photograph 16. Extracted SSP panels staged at JFOS under weighted plastic sheeting. Viewing northwest.



**APPENDIX B**  
**ANALYTICAL REPORTS**

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*Analytical Resources, Inc. Report No. YY33, dated Sept. 16, 2014*

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**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

9 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile, 0995**  
**ARI Job No.: YY33**

Dear Miles:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the final data for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted three wipe samples on August 29, 2014. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for PCBs as requested.

There were no anomalies associated with the analyses of these samples.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions regarding these results, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
eFile YY33

Enclosures

ARI Assigned Number:	<u>VY33</u>	Turn-around Requested:	<del>RUSH</del> STD <sup>T</sup>
ARI Origin Company:	JORGENSEN FORGE	Phone:	206.762.1100
Client Contact:	MILES DYER		
Client Project Name:	JFOS SHEET PILE		
Client Project #:	0995	Samplers:	L MK

Sample ID	Date	Time	Matrix	No. Containers
SSP-W-20140829	8-27-14	0740	WIPG	1
SSP-S-20140829	8-27-14	0825	WIPG	1
SSP-N-20140829	8-27-14	0930	WIPG	1

Comments/Special Instructions <b>*CC DEE GARDNER</b> <b>AT SOUNDEARTH</b> <b>dgardner@soundearthline.com</b>  <b>* LEVEL 2B</b>	Relinquished by <small>(Signature)</small> LK JK  Printed Name L E Korb  Company. Sand Earth  Date & Time 8-27-14     12:50	Received by <small>(Signature)</small>  Printed Name: ANV  Company AK
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Page: _____ of _____	
Date: _____	Ice Present? <input checked="" type="checkbox"/> Y
No. of Coolers: 1	Cooler Temps: 17.3

[illegible]

Comments/Special Instructions • CC DEE GARDNER AT SOUNDEARTH dgardner@ soundearthline.com • LEVEL 2B	Relinquished by (Signature) <i>L. Z. Korb</i>	Received by (Signature) <i>A. Volgardsen</i>	Relinquished by (Signature)	Received by (Signature)
	Printed Name L. Z. Korb	Printed Name A. Volgardsen	Printed Name	Printed Name
	Company Sound Earth	Company ARI	Company	Company
	Date & Time 9-27-17 12:50	Date & Time 8/29/14 1250	Date & Time	Date & Time

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



# Cooler Receipt Form

ARI Client: Jorgensen Euge

Project Name: JELS Sheet Pile

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: Y/33

Tracking No. \_\_\_\_\_ (NA)

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 13.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9087752

Cooler Accepted by: AN Date: 8/29/14 Time: 1350

Complete custody forms and attach all shipping documents

## Log-in Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA YES

Was Sample Split by ARI: NA YES Date/Time: \_\_\_\_\_ Equipment \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: TS Date: 8-29-14 Time: 1351

\*\* Notify Project Manager of discrepancies or concerns \*\*

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

By: \_\_\_\_\_ Date: \_\_\_\_\_



Small → "sm" (< 2 mm)  
Peabubbles → "pb" (2 to < 4 mm)  
Large → "lg" (4 to < 6 mm)  
Headspace → "hs" (> 6 mm)

# Sample ID Cross Reference Report



ARI Job No: YY33  
Client: Jorgensen Forge  
Project Event: 0995  
Project Name: JFOS Sheet Pile

Sample ID	ARI		Matrix	Sample Date/Time	VTSR
	Lab ID	LIMS ID			
1. SSP-W-20140829	YY33A	14-17799	Wipe	08/29/14 07:40	08/29/14 12:50
2. SSP-S-20140829	YY33B	14-17800	Wipe	08/29/14 08:25	08/29/14 12:50
3. SSP-N-20140829	YY33C	14-17801	Wipe	08/29/14 09:30	08/29/14 12:50



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

## **Data Reporting Qualifiers**

**Effective 12/31/13**

### **Inorganic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Duplicate RPD is not within established control limits
- B** Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N** Matrix Spike recovery not within established control limits
- NA** Not Applicable, analyte not spiked
- H** The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L** Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### **Organic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Flagged value is not within established control limits
- B** Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J** Estimated concentration when the value is less than ARI's established reporting limits
- D** The spiked compound was not detected due to sample extract dilution
- E** Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.





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- Q** Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S** Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA** The flagged analyte was not analyzed for
- NR** Spiked compound recovery is not reported due to chromatographic interference
- NS** The flagged analyte was not spiked into the sample
- M** Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y** The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC** Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" (Dioxin/Furan analysis only)
- C** The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P** The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X** Analyte signal includes interference from polychlorinated diphenyl ethers. (Dioxin/Furan analysis only)
- Z** Analyte signal includes interference from the sample matrix or perfluorokerosene ions. (Dioxin/Furan analysis only)



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Analytical Chemists and  
Consultants

## **Geotechnical Data**

- A**      The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F**      Samples were frozen prior to particle size determination
- SM**     Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS**     Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W**      Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: MB-090214  
METHOD BLANK

Lab Sample ID: MB-090214  
LIMS ID: 14-17799  
Matrix: Wipe  
Data Release Authorized: *MMW*  
Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge  
Project: JFOS Sheet File  
0995  
Date Sampled: NA  
Date Received: NA

Date Extracted: 09/02/14  
Date Analyzed: 09/06/14 18:55  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: No  
Acid Cleanup: Yes

Sample Amount: 1.00 Wipe  
Final Extract Volume: 10 mL  
Dilution Factor: 1.00  
Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	1.0	< 1.0 U
11097-69-1	Aroclor 1254	1.0	< 1.0 U
11096-82-5	Aroclor 1260	1.0	< 1.0 U
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	89.5%
Tetrachlorometaxylene	81.2%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-W-20140829  
SAMPLE

Lab Sample ID: YY33A

LIMS ID: 14-17799

Matrix: Wipe

Data Release Authorized: *WW*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/06/14 20:00

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	20	< 20 YE
11097-69-1	Aroclor 1254	1.0	50 E
11096-82-5	Aroclor 1260	1.0	18 E
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	107%
Tetrachlorometaxylene	87.8%

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3580A

Page 1 of 1

Sample ID: SSP-W-20140829

DILUTION

Lab Sample ID: YY33A

LIMS ID: 14-17799

Matrix: Wipe

Data Release Authorized: *MM*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/08/14 13:39

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 20.0

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	4.0	< 4.0 U
53469-21-9	Aroclor 1242	4.0	< 4.0 U
12672-29-6	Aroclor 1248	30	< 30 Y
11097-69-1	Aroclor 1254	4.0	68
11096-82-5	Aroclor 1260	4.0	19
11104-28-2	Aroclor 1221	4.0	< 4.0 U
11141-16-5	Aroclor 1232	4.0	< 4.0 U
37324-23-5	Aroclor 1262	4.0	< 4.0 U
11100-14-4	Aroclor 1268	4.0	< 4.0 U

Reported in Total µg

## PCB Surrogate Recovery

Decachlorobiphenyl	109%
Tetrachlorometaxylene	108%



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-S-20140829  
SAMPLE

Lab Sample ID: YY33B

LIMS ID: 14-17800

Matrix: Wipe

Data Release Authorized: *mm*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/06/14 20:22

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	30	< 30 YE
11097-69-1	Aroclor 1254	1.0	150 E
11096-82-5	Aroclor 1260	1.0	48 E
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	87.0%
Tetrachlorometaxylene	90.5%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-S-20140829  
DILUTION

Lab Sample ID: YY33B

LIMS ID: 14-17800

Matrix: Wipe

Data Release Authorized: *MMW*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/08/14 14:01

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 40.0

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.0	< 8.0 U
53469-21-9	Aroclor 1242	8.0	< 8.0 U
12672-29-6	Aroclor 1248	8.0	< 8.0 U
11097-69-1	Aroclor 1254	8.0	160
11096-82-5	Aroclor 1260	8.0	49
11104-28-2	Aroclor 1221	8.0	< 8.0 U
11141-16-5	Aroclor 1232	8.0	< 8.0 U
37324-23-5	Aroclor 1262	8.0	< 8.0 U
11100-14-4	Aroclor 1268	8.0	< 8.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3580A

Page 1 of 1

Sample ID: SSP-N-20140829

SAMPLE

Lab Sample ID: YY33C

LIMS ID: 14-17801

Matrix: Wipe

Data Release Authorized: *mm*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/06/14 20:44

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	8.0	< 8.0 Y
11097-69-1	Aroclor 1254	1.0	33 E
11096-82-5	Aroclor 1260	1.0	9.2
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

## PCB Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	84.5%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-N-20140829  
DILUTION

Lab Sample ID: YY33C

LIMS ID: 14-17801

Matrix: Wipe

Data Release Authorized: *MM*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/08/14 14:23

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 10.0

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	2.0	< 2.0 U
53469-21-9	Aroclor 1242	2.0	< 2.0 U
12672-29-6	Aroclor 1248	10	< 10 Y
11097-69-1	Aroclor 1254	2.0	37
11096-82-5	Aroclor 1260	2.0	11
11104-28-2	Aroclor 1221	2.0	< 2.0 U
11141-16-5	Aroclor 1232	2.0	< 2.0 U
37324-23-5	Aroclor 1262	2.0	< 2.0 U
11100-14-4	Aroclor 1268	2.0	< 2.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	131%
Tetrachlorometaxylene	88.5%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

16 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile, 0995**  
**ARI Job No.: YY33**

Dear Miles:

Please find enclosed the additional deliverables for the samples from the project referenced above.

It was discovered that the results for the LCS and the corresponding surrogate recovery form were missing from the original report.

An electronic copy of these forms will remain on file with ARI. Should you have any questions regarding this submission, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
eFile YY33

Enclosures

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Page 1 of 1Sample ID: LCS-090214  
LAB CONTROL

Lab Sample ID: LCS-090214

LIMS ID: 14-17799

Matrix: Wipe

Data Release Authorized: *W*

Reported: 09/09/14

QC Report No: YY33-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 08/29/14

Date Received: 08/29/14

Date Extracted: 09/02/14

Date Analyzed: 09/06/14 19:16

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: Yes

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	4.30	5.00	86.0%
Aroclor 1260	4.71	5.00	94.2%

## PCB Surrogate Recovery

Decachlorobiphenyl	93.8%
Tetrachlorometaxylene	82.5%

Reported in Total µg

SW8082/PCB SURROGATE RECOVERY SUMMARY

Matrix: Wipe

QC Report No: YY33-Jorgensen Forge  
Project: JFOS Sheet Pile  
0995

Client ID	DCBP	TCMX	TOT OUT
MB-090214	89.5%	81.2%	0
LCS-090214	93.8%	82.5%	0
SSP-W-20140829	107%	87.8%	0
SSP-W-20140829 DL	109%	108%	0
SSP-S-20140829	87.0%	90.5%	0
SSP-S-20140829 DL	D	D	0
SSP-N-20140829	101%	84.5%	0
SSP-N-20140829 DL	131%	88.5%	0

LCS/MB LIMITS      QC LIMITS

(DCBP) = Decachlorobiphenyl	(30-160)	(30-160)
(TCMX) = Tetrachlorometaxylene	(30-160)	(30-160)

Prep Method: SW3580A  
Log Number Range: 14-17799 to 14-17801

*Analytical Resources, Inc. Report No. YZ49, dated Sept. 23, 2014*

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**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

23 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile, 0995**  
**ARI Job No.: YZ49**

Dear Miles:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the final data for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one wipe sample on September 10, 2014. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form.

The sample was analyzed for PCBs as requested.

The percent difference (%D) for Aroclor 1254 was high for one column for the CCAL that bracketed the dilution of this sample. This column was used for confirmation only. The data from the primary column was used for quantitation.

There were no further anomalies associated with the analyses of this sample.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions regarding these results, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
Mingta Lin, Pyron Environmental  
eFile YZ49

Enclosures

ARI Assigned Number:	7249	Turn-around Requested:	Standard
ARI Client Company:	Jorgensen Forge	Phone:	206-762-1100
Client Contact:	Miles Dyer		

Cooler Temps: 15.7



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)  
[www.arilabs.com](http://www.arilabs.com)

Client Project Name: JFAS sheet pile

Client Project #: 0975

**Samplers:** CCC

### Analysis Requested

### Notes/Comments

PCBs  
EPA 8052

**Sample ID**

Date \_\_\_\_\_

Time

## Matrix

No. Containers

SSP-E-20140910

9-13-74

1435

wipe

1



### Comments/Special Instructions

CC Dec Garden  
© Sound Earth  
dgardeners  
soundearthinc.co

Relinquished by:  
(Signature) *[Signature]*

Printed Name: \_\_\_\_\_

**Company:**

**Date & Time:**

9-10-14 1509

Received by:

(Signature)

Printed Name \_\_\_\_\_

**Company**

Date &amp; Time:

9/10/14 1504

Retinquished by

(Signature)

Printed Name \_\_\_\_\_

[illegible]

Date &amp; Time

Received by.

(Signature)

Printed Name:

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Date &amp; Time:

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**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

# Cooler Receipt Form

ARI Client: Jorgensen Forge

COC No(s): Y249 NA

Assigned ARI Job No: Y249

Project Name: JFos sheet p.1c

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: NA

Tracking No: NA

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry)

Time: 1509

15.7

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9187795

Cooler Accepted by: A Date: 9/10/14 Time: 1509

**Complete custody forms and attach all shipping documents**

## Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI... NA

Was Sample Split by ARI: NO YES Date/Time: TS Equipment: TS Split by: TS

Samples Logged by: TS Date: 9-11-14 Time: 0429

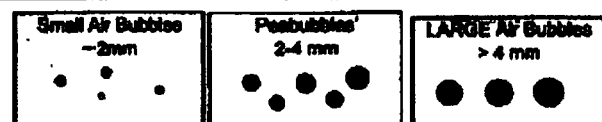
**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

By:

Date:



Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)

# Sample ID Cross Reference Report



ARI Job No: YZ49  
Client: Jorgensen Forge  
Project Event: 0995  
Project Name: JFOS Sheet Pile

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. SSP-E-20140910	YZ49A	14-18330	Wipe	09/10/14 14:35	09/10/14 15:09



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

## **Data Reporting Qualifiers**

**Effective 12/31/13**

### **Inorganic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Duplicate RPD is not within established control limits
- B** Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N** Matrix Spike recovery not within established control limits
- NA** Not Applicable, analyte not spiked
- H** The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L** Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### **Organic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Flagged value is not within established control limits
- B** Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J** Estimated concentration when the value is less than ARI's established reporting limits
- D** The spiked compound was not detected due to sample extract dilution
- E** Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.



**Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants**

- Q** Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S** Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA** The flagged analyte was not analyzed for
- NR** Spiked compound recovery is not reported due to chromatographic interference
- NS** The flagged analyte was not spiked into the sample
- M** Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y** The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC** Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" (Dioxin/Furan analysis only)
- C** The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P** The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X** Analyte signal includes interference from polychlorinated diphenyl ethers. (Dioxin/Furan analysis only)
- Z** Analyte signal includes interference from the sample matrix or perfluorokerosene ions. (Dioxin/Furan analysis only)





**Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants**

## **Geotechnical Data**

- A**      The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F**      Samples were frozen prior to particle size determination
- SM**    Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS**    Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W**    Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: MB-091114  
METHOD BLANK

Lab Sample ID: MB-091114  
LIMS ID: 14-18330  
Matrix: Wipe  
Data Release Authorized: *MM*  
Reported: 09/23/14

QC Report No: YZ49-Jorgensen Forge  
Project: JFOS Sheet Pile  
0995  
Date Sampled: NA  
Date Received: NA

Date Extracted: 09/11/14  
Date Analyzed: 09/20/14 02:57  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes  
Acid Cleanup: Yes

Sample Amount: 1.00 Wipe  
Final Extract Volume: 10 mL  
Dilution Factor: 1.00  
Silica Gel: No

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	1.0	< 1.0 U
11097-69-1	Aroclor 1254	1.0	< 1.0 U
11096-82-5	Aroclor 1260	1.0	< 1.0 U
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	94.2%
Tetrachlorometaxylene	75.5%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-E-20140910  
SAMPLE

Lab Sample ID: YZ49A

LIMS ID: 14-18330

Matrix: Wipe

Data Release Authorized: *mw*

Reported: 09/23/14

QC Report No: YZ49-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 09/10/14

Date Received: 09/10/14

Date Extracted: 09/11/14

Date Analyzed: 09/20/14 03:41

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 40 mL

Dilution Factor: 1.00

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	4.0	< 4.0 U
53469-21-9	Aroclor 1242	4.0	< 4.0 U
12672-29-6	Aroclor 1248	80	< 80 YE
11097-69-1	Aroclor 1254	4.0	730 E
11096-82-5	Aroclor 1260	4.0	190 EP
11104-28-2	Aroclor 1221	4.0	< 4.0 U
11141-16-5	Aroclor 1232	4.0	< 4.0 U
37324-23-5	Aroclor 1262	4.0	< 4.0 U
11100-14-4	Aroclor 1268	4.0	< 4.0 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	151%
Tetrachlorometaxylene	80.6%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-E-20140910  
DILUTION

Lab Sample ID: YZ49A  
LIMS ID: 14-18330

QC Report No: YZ49-Jorgensen Forge  
Project: JFOS Sheet Pile  
0995

Matrix: Wipe  
Data Release Authorized: *YMW*  
Reported: 09/23/14

Date Sampled: 09/10/14  
Date Received: 09/10/14

Date Extracted: 09/11/14  
Date Analyzed: 09/22/14 13:12  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: No  
Acid Cleanup: Yes

Sample Amount: 1.00 Wipe  
Final Extract Volume: 40 mL  
Dilution Factor: 100  
Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	80	< 80 U
53469-21-9	Aroclor 1242	80	< 80 U
12672-29-6	Aroclor 1248	80	< 80 U
11097-69-1	Aroclor 1254	80	860
11096-82-5	Aroclor 1260	80	300
11104-28-2	Aroclor 1221	80	< 80 U
11141-16-5	Aroclor 1232	80	< 80 U
37324-23-5	Aroclor 1262	80	< 80 U
11100-14-4	Aroclor 1268	80	< 80 U

Reported in Total µg

PCB Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

**SW8082/PCB SURROGATE RECOVERY SUMMARY**

Matrix: Wipe

QC Report No: YZ49-Jorgensen Forge  
Project: JFOS Sheet Pile  
0995

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-091114	94.2%	75.5%	0
LCS-091114	95.0%	78.2%	0
SSP-E-20140910	151%	80.6%	0
SSP-E-20140910 DL	D	D	0

**LCS/MB LIMITS      QC LIMITS**

(DCBP) = Decachlorobiphenyl	(30-160)	(30-160)
(TCMX) = Tetrachlorometaxylene	(30-160)	(30-160)

Prep Method: SW3580A  
Log Number Range: 14-18330 to 14-18330

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Page 1 of 1Sample ID: LCS-091114  
LAB CONTROL

Lab Sample ID: LCS-091114

LIMS ID: 14-18330

Matrix: Wipe

Data Release Authorized: *MMW*

Reported: 09/23/14

QC Report No: YZ49-Jorgensen Forge

Project: JFOS Sheet Pile

0995

Date Sampled: 09/10/14

Date Received: 09/10/14

Date Extracted: 09/11/14

Date Analyzed: 09/20/14 03:19

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	4.22	5.00	84.4%
Aroclor 1260	5.15	5.00	103%

## PCB Surrogate Recovery

Decachlorobiphenyl	95.0%
Tetrachlorometaxylene	78.2%

Reported in Total µg



4  
PCB METHOD BLANK SUMMARY

BLANK NO.

YZ49MB1

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ49

Project: JFOS SHEET PILE

Lab Sample ID: YZ49MB1

Lab File ID: 0919A040

Date Extracted: 09/11/14

Matrix: SOLID

Date Analyzed: 09/20/14

Instrument ID: ECD7

Time Analyzed: 0257

GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED =====
01	YZ49LCS1	YZ49LCS1	09/20/14
02	SSP-E-20140910	YZ49A	09/20/14

ALL RUNS ARE DUAL COLUMN

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
SK	5.54- 5.74	0.7845	0.7534	0.7572	0.7562	0.7662	0.7814	0.7665	1.8
B	14.43-14.63	1.3847	1.2110	1.1615	1.0771	1.0606	1.0558	1.1584	11.0

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
roclor-1016									
ak	RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1	7.54- 7.74	0.0223	0.0208	0.0207	0.0191	0.0182	0.0176	0.0198	9.0
2	8.07- 8.27	0.0659	0.0646	0.0641	0.0610	0.0595	0.0590	0.0623	4.6
3	8.25- 8.45	0.0279	0.0275	0.0272	0.0258	0.0248	0.0242	0.0262	6.0
4	8.68- 8.88	0.0138	0.0136	0.0134	0.0124	0.0115	0.0110	0.0126	9.3

AROCLOR AVERAGE %RSD = 7.2

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
roclor-1260									
ak	RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1	11.86-12.06	0.0500	0.0483	0.0483	0.0424	0.0425	0.0413	0.0455	8.4
2	12.18-12.38	0.0463	0.0454	0.0458	0.0407	0.0411	0.0403	0.0432	6.6
3	12.55-12.75	0.1222	0.1211	0.1241	0.1146	0.1186	0.1191	0.1200	2.8
4	12.95-13.15	0.0589	0.0584	0.0596	0.0545	0.0558	0.0556	0.0571	3.7
5	13.13-13.33	0.0377	0.0375	0.0380	0.0349	0.0356	0.0354	0.0365	3.7

AROCLOR AVERAGE %RSD = 5.0

FORM VI PCB-1

Y243' 80815

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	5.13- 5.33	1.2192	1.0817	1.0669	1.0070	0.9783	0.9559	1.0515	9.1
2	14.43-14.63	1.3661	1.2314	1.1539	1.0208	0.9832	0.9553	1.1184	14.4

roclor-1016	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 7.27- 7.47	0.0527	0.0481	0.0455	0.0408	0.0377	0.0349	0.0433	15.5
2 8.08- 8.28	0.1060	0.0978	0.0936	0.0846	0.0805	0.0765	0.0898	12.5
3 8.56- 8.76	0.0277	0.0265	0.0252	0.0224	0.0214	0.0201	0.0239	12.7
4 8.69- 8.89	0.0328	0.0297	0.0279	0.0244	0.0228	0.0212	0.0265	16.7

AROCLOR AVERAGE %RSD = 14.4

roclor-1260	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 11.72-11.92	0.0988	0.0908	0.0865	0.0740	0.0722	0.0686	0.0818	14.6
2 12.26-12.46	0.0957	0.0867	0.0839	0.0716	0.0698	0.0661	0.0790	14.6
3 12.54-12.74	0.1858	0.1704	0.1689	0.1485	0.1474	0.1420	0.1605	10.7
4 13.10-13.30	0.1309	0.1214	0.1167	0.1012	0.0989	0.0941	0.1105	13.2

AROCLOR AVERAGE %RSD = 13.3



FORM VI PCB-1

Y243: 0001 r

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.091	5.99-	6.19	0.00772
2	6.298	6.20-	6.40	0.00684
3	6.422	6.32-	6.52	0.02014
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	7.640	7.54-	7.74	0.00792
2	8.165	8.06-	8.26	0.02446
3	8.353	8.25-	8.45	0.01050
4	8.489	8.39-	8.59	0.00763
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	7.641	7.54-	7.74	0.01529
2	8.165	8.06-	8.26	0.04818
3	8.353	8.25-	8.45	0.02047
4	9.326	9.23-	9.43	0.01988
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	8.154	8.05-	8.25	0.03055
2	8.778	8.68-	8.88	0.01755
3	9.321	9.22-	9.42	0.03044
4	9.797	9.70-	9.90	0.03767

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	10.143	10.04-10.24	0.03598
2	10.533	10.43-10.63	0.02488
3	10.675	10.57-10.77	0.04837
4	11.037	10.94-11.14	0.05159
5	11.733	11.63-11.83	0.05112
Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	11.963	11.86-12.06	0.06338
2	12.280	12.18-12.38	0.04986
3	12.652	12.55-12.75	0.13623
4	13.049	12.95-13.15	0.04413
5	13.162	13.06-13.26	0.05810
Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	13.162	13.06-13.26	0.16503
2	13.231	13.13-13.33	0.16508
3	13.595	13.49-13.69	0.14388
4	14.225	14.12-14.32	0.44705

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.065	5.97- 6.17		0.01356
2	6.361	6.26- 6.46		0.00778
3	6.495	6.39- 6.59		0.02335
4	7.386	7.29- 7.49		0.00770
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	6.494	6.39- 6.59		0.01645
2	7.372	7.27- 7.47		0.01890
3	8.189	8.09- 8.29		0.03588
4	8.798	8.70- 8.90		0.01174
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	6.489	6.39- 6.59		0.01564
2	7.366	7.27- 7.47		0.03278
3	8.182	8.08- 8.28		0.06800
4	9.263	9.16- 9.36		0.02490
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	7.356	7.26- 7.46		0.01614
2	8.170	8.07- 8.27		0.04422
3	8.859	8.76- 8.96		0.02396
4	10.206	10.11-10.31		0.04565

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			Cal
Peak	RT	RT WIN	Factor
1	9.910	9.81-10.01	0.03100
2	10.100	10.00-10.20	0.03897
3	10.795	10.70-10.90	0.06467
4	11.055	10.96-11.16	0.06573
5	11.821	11.72-11.92	0.04902
Aroclor-1262			Cal
Peak	RT	RT WIN	Factor
1	12.370	12.27-12.47	0.08614
2	12.643	12.54-12.74	0.17319
3	13.152	13.05-13.25	0.07678
4	13.211	13.11-13.31	0.11751
5	13.853	13.75-13.95	0.06071
Aroclor-1268			Cal
Peak	RT	RT WIN	Factor
1	13.152	13.05-13.25	0.18571
2	13.215	13.12-13.32	0.17538
3	13.569	13.47-13.67	0.14298
4	14.234	14.13-14.33	0.39624



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	7.64	7.54	7.74	255.9	250.0	2.4
Aroclor-1242-2	8.16	8.06	8.26	241.7	250.0	-3.3
Aroclor-1242-3	8.35	8.25	8.45	239.3	250.0	-4.3
Aroclor-1242-4	9.33	9.23	9.43	241.3	250.0	-3.5

AVERAGE %D = 3.4

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	7.64	7.54	7.74	263.3	250.0	5.3
Aroclor-1016-2	8.16	8.07	8.27	239.8	250.0	-4.1
Aroclor-1016-3	8.35	8.25	8.45	242.1	250.0	-3.1
Aroclor-1016-4	8.78	8.68	8.88	245.9	250.0	-1.6

AVERAGE %D = 3.5

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	11.96	11.86	12.06	263.9	250.0	5.6
Aroclor-1260-2	12.28	12.18	12.38	255.7	250.0	2.3
Aroclor-1260-3	12.65	12.55	12.75	268.4	250.0	7.4
Aroclor-1260-4	13.05	12.95	13.15	254.7	250.0	1.9
Aroclor-1260-5	13.23	13.13	13.33	243.9	250.0	-2.4

AVERAGE %D = 3.9

FORM VII PCB

Y243: 00024

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	8.16	8.05	8.25	249.9	250.0	-0.0
Aroclor-1248-2	8.78	8.68	8.88	246.9	250.0	-1.2
Aroclor-1248-3	9.33	9.22	9.42	246.2	250.0	-1.5
Aroclor-1248-4	9.80	9.70	9.90	249.0	250.0	-0.4

AVERAGE %D = 0.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	265.8	250.0	6.3
Aroclor-1016-2	8.16	8.07	8.27	241.1	250.0	-3.6
Aroclor-1016-3	8.35	8.25	8.45	244.9	250.0	-2.0
Aroclor-1016-4	8.78	8.68	8.88	248.8	250.0	-0.5

AVERAGE %D = 3.1

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	267.8	250.0	7.1
Aroclor-1260-2	12.28	12.18	12.38	260.0	250.0	4.0
Aroclor-1260-3	12.65	12.55	12.75	272.6	250.0	9.0
Aroclor-1260-4	13.05	12.95	13.15	260.4	250.0	4.2
Aroclor-1260-5	13.23	13.13	13.33	249.7	250.0	-0.1

AVERAGE %D = 4.9

YZ49:00020

FORM VII PCB

Y245 00021



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.49	6.39	6.59	293.4	250.0	17.3
Aroclor-1242-2	7.37	7.27	7.47	295.7	250.0	18.3
Aroclor-1242-3	8.18	8.08	8.28	285.4	250.0	14.2
Aroclor-1242-4	9.26	9.16	9.36	284.0	250.0	13.6

AVERAGE %D = 15.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	293.0	250.0	17.2
Aroclor-1016-2	8.18	8.08	8.28	273.7	250.0	9.5
Aroclor-1016-3	8.65	8.56	8.76	283.3	250.0	13.3
Aroclor-1016-4	8.79	8.69	8.89	278.3	250.0	11.3

AVERAGE %D = 12.8

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	224.2	250.0	-10.3
Aroclor-1260-2	12.36	12.26	12.46	230.3	250.0	-7.9
Aroclor-1260-3	12.64	12.54	12.74	234.7	250.0	-6.1
Aroclor-1260-4	13.20	13.10	13.30	220.5	250.0	-11.8

AVERAGE %D = 9.0

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	7.36	7.26	7.46	302.6	250.0	21.0
Aroclor-1248-2	8.18	8.07	8.27	295.6	250.0	18.2
Aroclor-1248-3	8.86	8.76	8.96	279.2	250.0	11.7
Aroclor-1248-4	10.21	10.11	10.31	305.9	250.0	22.4

AVERAGE %D = 18.3

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	291.0	250.0	16.4
Aroclor-1016-2	8.18	8.08	8.28	271.9	250.0	8.8
Aroclor-1016-3	8.65	8.56	8.76	282.7	250.0	13.1
Aroclor-1016-4	8.79	8.69	8.89	278.2	250.0	11.3

AVERAGE %D = 12.4

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	224.0	250.0	-10.4
Aroclor-1260-2	12.36	12.26	12.46	230.0	250.0	-8.0
Aroclor-1260-3	12.64	12.54	12.74	235.7	250.0	-5.7
Aroclor-1260-4	13.20	13.10	13.30	221.1	250.0	-11.5

AVERAGE %D = 8.9

FORM VII PCB



FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
-----					-----	-----	-----	-----
ICAL MIDPT					4434421	2.698	4077244	14.794
UPPER LIMIT					8868842	2.798	8154488	14.894
LOWER LIMIT					2217210	2.598	2038622	14.694
-----					-----	-----	-----	-----
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		IS1 AREA	RT	IS2 AREA	RT
-----	-----	-----	-----		-----	-----	-----	-----
01	ZZZZZ	07/21/14	1626		4373805	2.692	3760196	14.794
02		07/21/14	1648		4434421	2.698	4077244	14.794
03		07/21/14	1710		4447124	2.695	3891807	14.794
04		07/21/14	1732		4441352	2.694	3882218	14.795
05		07/21/14	1754		4414652	2.693	3889578	14.795
06		07/21/14	1816		4521857	2.697	3895919	14.795
07		07/21/14	1837		4493869	2.693	3945031	14.795
08		07/21/14	1859		4438700	2.692	3879215	14.795
09		07/21/14	1921		4414839	2.697	3887155	14.795
10		07/21/14	1943		4508938	2.695	3960286	14.795
11		07/21/14	2005		4494447	2.696	3952241	14.795
12		07/21/14	2027		4552734	2.702	4020488	14.795
13	ZZZZZ	07/21/14	2049		4445508	2.694	3936762	14.795
14	ZZZZZ	07/21/14	2111		4558602	2.696	4045633	14.795
15	ZZZZZ	07/21/14	2133		4461342	2.697	4016945	14.795
16	ZZZZZ	07/21/14	2154		4529995	2.696	4048326	14.794
17	ZZZZZ	07/21/14	2216		4527689	2.697	4039776	14.794
18	ZZZZZ	07/21/14	2238		4512425	2.694	4015293	14.794
19		09/20/14	0108		5417163	2.703	4160853	14.794
20		09/20/14	0130		4679826	2.700	4027634	14.794
21	YZ49MB1	09/20/14	0257		5178898	2.703	4186334	14.793
22	ZZZZZ	09/20/14	0319		5144447	2.704	4139434	14.793
23	SSP-E-201409	09/20/14	0341		5354577	2.705	4763441	14.795
24		09/20/14	0508		5158208	2.704	4516663	14.793
25		09/20/14	0530		4694209	2.701	4060251	14.794

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

YZ49: 000034

Page 1 of 1

FORM VIII PCB

Y243166635

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: YZ49

Project: JFOS SHEET

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
ICAL MIDPT					11221020	3.068	7927142	15.138
UPPER LIMIT					22442040	3.168	15854284	15.238
LOWER LIMIT					5610510	2.968	3963571	15.038
					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
01	ZZZZZ	ZZZZZ	07/21/14	1626	11004730	3.063	7358659	15.138
02		0.25PPMAR166	07/21/14	1648	11221020	3.068	7927142	15.138
03		0.02PPMAR166	07/21/14	1710	11165593	3.066	7592758	15.138
04		0.05PPMAR166	07/21/14	1732	11143504	3.065	7552963	15.139
05		1PPMAR1660	07/21/14	1754	11066585	3.065	7627214	15.138
06		0.1PPMAR1660	07/21/14	1816	11325344	3.067	7687777	15.138
07		0.5PPMAR1660	07/21/14	1837	11352435	3.063	7765451	15.138
08		AR1242	07/21/14	1859	11252651	3.063	7692669	15.138
09		AR1248	07/21/14	1921	11180919	3.066	7655141	15.138
10		AR1254	07/21/14	1943	11293843	3.066	7784494	15.138
11		AR2162	07/21/14	2005	11029310	3.067	7767574	15.137
12		AR3268	07/21/14	2027	11362773	3.070	7876862	15.138
13	ZZZZZ	ZZZZZ	07/21/14	2049	11184271	3.065	7717457	15.139
14	ZZZZZ	ZZZZZ	07/21/14	2111	11369418	3.066	7903232	15.138
15	ZZZZZ	ZZZZZ	07/21/14	2133	11175868	3.067	7850594	15.137
16	ZZZZZ	ZZZZZ	07/21/14	2154	11269109	3.066	7889154	15.137
17	ZZZZZ	ZZZZZ	07/21/14	2216	11177181	3.066	7868041	15.138
18	ZZZZZ	ZZZZZ	07/21/14	2238	11096232	3.064	7812050	15.137
19		AR1242	09/20/14	0108	9231366	3.066	7023173	15.132
20		AR1660	09/20/14	0130	7770669	3.065	6609828	15.132
21	YZ49MB1	YZ49MB1	09/20/14	0257	11075822	3.066	7203088	15.131
22	YZ49LCS1	YZ49LCS1	09/20/14	0319	11007344	3.067	7095502	15.132
23	SSP-E-201409	YZ49A	09/20/14	0341	11509087	3.067	14399038	15.132
24		AR1248	09/20/14	0508	8863276	3.067	7646947	15.132
25		AR1660	09/20/14	0530	7902677	3.065	6867926	15.132

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

YZ49: 000000

FORM VIII PCB

*Analytical Resources, Inc. Report No. YY75, dated Sept. 23, 2014*

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**Analytical Resources, Incorporated**

Analytical Chemists and Consultants

23 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile**  
**ARI Job No.: YZ75**

Dear Miles:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the final data for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one soil sample on September 11, 2014. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form. The sample was analyzed for PCBs as requested.

The percent differences (%Ds) for Aroclors 1016 and 1248 were high for one column for the CCALs that bracketed the analysis of this sample. This column was used for confirmation only. The data from the primary column was used for quantitation.

The percent recovery for the surrogate, TCMX, was low following the analysis of this sample. Since the percent recovery for the secondary surrogate, DCBP, was within established QC limits, no corrective actions were taken.

There were no further anomalies associated with the analysis of this sample.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions regarding these results, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
Mingta Lin, Pyron Environmental  
eFile YZ75

Enclosures



### Chain of Custody Record & Laboratory Analysis Request

**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)  
[www.arilabs.com](http://www.arilabs.com)

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

# Cooler Receipt Form

ARI Client: Jorgensen Forge  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: YZ75

Project Name: IFOS sheet Pile  
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: \_\_\_\_\_ (NA)

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)  
Were custody papers included with the cooler? YES NO  
Were custody papers properly filled out (ink, signed, etc.) YES NO  
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 20.1  
Time: 1345  
If cooler temperature is out of compliance fill out form 00070F  
Cooler Accepted by: JM Date: 9/11/14 Time: 1345 Temp Gun ID#: 90877952

Complete custody forms and attach all shipping documents

## Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)  
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? NA YES (NO)  
Were all bottles sealed in individual plastic bags? YES (NO)  
Did all bottles arrive in good condition (unbroken)? YES NO  
Were all bottle labels complete and legible? YES NO  
Did the number of containers listed on COC match with the number of containers received? YES NO  
Did all bottle labels and tags agree with custody papers? YES NO  
Were all bottles used correct for the requested analyses? YES NO  
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES NO  
Were all VOC vials free of air bubbles? NA YES NO  
Was sufficient amount of sample sent in each bottle? YES NO  
Date VOC Trp Blank was made at ARI: NA  
Was Sample Split by ARI: (NA) YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 9/11/14 Time: 1650

\*\* Notify Project Manager of discrepancies or concerns \*\*

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

By:

Date:

<b>Small Air Bubbles</b> ~2mm	<b>Peabubbles</b> 2-4 mm	<b>LARGE Air Bubbles</b> > 4 mm	Small → "sm" (< 2 mm)
			Peabubbles → "pb" (2 to < 4 mm)
			Large → "lg" (4 to < 6 mm)
			Headspace → "hs" (> 6 mm)



# Cooler Temperature Compliance Form

Cooler#: 1 Temperature(°C): 20.1

Sample ID	Bottle Count	Bottle Type
SSP-SOLIDS-20140911	1	8oz wide Mouth

Cooler#:                      Temperature(°C):                     

Sample ID	Bottle Count	Bottle Type

Cooler#:                      Temperature(°C):                     

Sample ID	Bottle Count	Bottle Type

Cooler#:                      Temperature(°C):                     

Sample ID	Bottle Count	Bottle Type

Completed by: AV Date: 9/11/14 Time: 11052

# Sample ID Cross Reference Report

ANALYTICAL  
RESOURCES  
INCORPORATED

ARI Job No: YZ75  
Client: Jorgensen Forge  
Project Event: N/A  
Project Name: JFOS Sheet File

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. SSP-SOLIDS-20140911	YZ75A	14-18512	Soil	09/11/14 12:55	09/11/14 13:45



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

## **Data Reporting Qualifiers**

**Effective 12/31/13**

### **Inorganic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Duplicate RPD is not within established control limits
- B** Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N** Matrix Spike recovery not within established control limits
- NA** Not Applicable, analyte not spiked
- H** The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L** Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### **Organic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Flagged value is not within established control limits
- B** Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J** Estimated concentration when the value is less than ARI's established reporting limits
- D** The spiked compound was not detected due to sample extract dilution
- E** Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.



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Consultants

- Q** Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S** Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA** The flagged analyte was not analyzed for
- NR** Spiked compound recovery is not reported due to chromatographic interference
- NS** The flagged analyte was not spiked into the sample
- M** Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y** The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC** Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" (Dioxin/Furan analysis only)
- C** The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P** The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X** Analyte signal includes interference from polychlorinated diphenyl ethers. (Dioxin/Furan analysis only)
- Z** Analyte signal includes interference from the sample matrix or perfluorokerosene ions. (Dioxin/Furan analysis only)



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Analytical Chemists and  
Consultants**

### **Geotechnical Data**

- A**      The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F**      Samples were frozen prior to particle size determination
- SM**    Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS**    Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W**    Weight of sample in some pipette aliquots was below the level required for accurate weighting



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3546  
Page 1 of 1

Sample ID: MB-091614  
METHOD BLANK

Lab Sample ID: MB-091614  
LIMS ID: 14-18512

QC Report No: YZ75-Jorgensen Forge  
Project: JFOS Sheet Pile

Matrix: Soil

Data Release Authorized: *mm*  
Reported: 09/23/14

Date Sampled: NA  
Date Received: NA

Date Extracted: 09/16/14  
Date Analyzed: 09/19/14 17:50  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes  
Acid Cleanup: Yes  
Florisil Cleanup: No

Sample Amount: 12.5 g  
Final Extract Volume: 2.50 mL  
Dilution Factor: 1.00  
Silica Gel: Yes  
Percent Moisture: NA

CAS Number	Analyte	LOQ	Result
12674-11-2	Aroclor 1016	4.0	< 4.0 U
53469-21-9	Aroclor 1242	4.0	< 4.0 U
12672-29-6	Aroclor 1248	4.0	< 4.0 U
11097-69-1	Aroclor 1254	4.0	< 4.0 U
11096-82-5	Aroclor 1260	4.0	< 4.0 U
11104-28-2	Aroclor 1221	4.0	< 4.0 U
11141-16-5	Aroclor 1232	4.0	< 4.0 U
37324-23-5	Aroclor 1262	4.0	< 4.0 U
11100-14-4	Aroclor 1268	4.0	< 4.0 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	93.8%
Tetrachlorometaxylene	72.5%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3546  
Page 1 of 1

Sample ID: SSP-SOLIDS-20140911  
SAMPLE

Lab Sample ID: YZ75A  
LIMS ID: 14-18512

QC Report No: YZ75-Jorgensen Forge  
Project: JFOS Sheet Pile

Matrix: Soil

Data Release Authorized: *mm*  
Reported: 09/23/14

Date Sampled: 09/11/14  
Date Received: 09/11/14

Date Extracted: 09/16/14  
Date Analyzed: 09/20/14 02:35  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes  
Acid Cleanup: Yes  
Florisil Cleanup: No

Sample Amount: 4.92 g-dry-wt  
Final Extract Volume: 2.50 mL  
Dilution Factor: 10.0  
Silica Gel: Yes  
Percent Moisture: 1.7%

CAS Number	Analyte	LOQ	Result
12674-11-2	Aroclor 1016	100	< 100 U
53469-21-9	Aroclor 1242	100	< 100 U
12672-29-6	Aroclor 1248	100	2,400
11097-69-1	Aroclor 1254	100	3,100
11096-82-5	Aroclor 1260	100	900
11104-28-2	Aroclor 1221	100	< 100 U
11141-16-5	Aroclor 1232	100	< 100 U
37324-23-5	Aroclor 1262	100	< 100 U
11100-14-4	Aroclor 1268	100	< 100 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	50.0%
Tetrachlorometaxylene	43.2%

SW8082/PCB SOIL/SOLID/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: YZ75-Jorgensen Forge  
Project: JFOS Sheet Pile

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-091614	93.8%	59-115	72.5%	58-112	0
LCS-091614	89.2%	59-115	71.8%	58-112	0
LCSD-091614	92.0%	59-115	68.2%	58-112	0
SSP-SOLIDS-20140911	50.0%	47-120	43.2%*	53-116	1

Microwave (MARS) Control Limits PCBSMI

Prep Method: SW3546

Log Number Range: 14-18512 to 14-18512

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Page 1 of 1Sample ID: LCS-091614  
LCS/LCSD

Lab Sample ID: LCS-091614

LIMS ID: 14-18512

Matrix: Soil

Data Release Authorized: *mm*

Reported: 09/23/14

QC Report No: YZ75-Jorgensen Forge

Project: JFOS Sheet File

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 09/16/14

Sample Amount LCS: 12.5 g-dry-wt

LCSD: 12.5 g-dry-wt

Date Analyzed LCS: 09/19/14 18:12

Final Extract Volume LCS: 2.50 mL

LCSD: 09/19/14 18:34

LCSD: 2.50 mL

Instrument/Analyst LCS: ECD7/JGR

Dilution Factor LCS: 1.00

LCSD: ECD7/JGR

LCSD: 1.00

GPC Cleanup: No

Silica Gel: Yes

Sulfur Cleanup: Yes

Percent Moisture: NA

Acid Cleanup: Yes

Florisil Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	77.0	101	76.2%	76.7	101	75.9%	0.4%
Aroclor 1260	86.8	101	85.9%	91.8	101	90.9%	5.6%

## PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	89.2%	92.0%
Tetrachlorometaxylene	71.8%	68.2%

Results reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

4  
PCB METHOD BLANK SUMMARY

BLANK NO.

YZ45MBS1

Lab Name: ANALYTICAL RESOURCES INC

Client: THE BOEING COMPANY

ARI Job No.: YZ75

Project: BP2 PERIMETER

Lab Sample ID: YZ45MBS1

Lab File ID: 0919A015

Date Extracted: 09/16/14

Matrix: SOLID

Date Analyzed: 09/19/14

Instrument ID: ECD7

Time Analyzed: 1750

GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED =====
01	YZ45LCSS1	YZ45LCSS1	09/19/14
02	YZ45LCSDS1	YZ45LCSDS1	09/19/14
03	SSP-SOLIDS-20140911	YZ75A	09/20/14

ALL RUNS ARE DUAL COLUMN

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	5.54- 5.74	0.7845	0.7534	0.7572	0.7562	0.7662	0.7814	0.7665	1.8
2	14.43-14.63	1.3847	1.2110	1.1615	1.0771	1.0606	1.0558	1.1584	11.0

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	7.54- 7.74	0.0223	0.0208	0.0207	0.0191	0.0182	0.0176	0.0198	9.0
2	8.07- 8.27	0.0659	0.0646	0.0641	0.0610	0.0595	0.0590	0.0623	4.6
3	8.25- 8.45	0.0279	0.0275	0.0272	0.0258	0.0248	0.0242	0.0262	6.0
4	8.68- 8.88	0.0138	0.0136	0.0134	0.0124	0.0115	0.0110	0.0126	9.3

AROCLOR AVERAGE %RSD = 7.2

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	11.86-12.06	0.0500	0.0483	0.0483	0.0424	0.0425	0.0413	0.0455	8.4
2	12.18-12.38	0.0463	0.0454	0.0458	0.0407	0.0411	0.0403	0.0432	6.6
3	12.55-12.75	0.1222	0.1211	0.1241	0.1146	0.1186	0.1191	0.1200	2.8
4	12.95-13.15	0.0589	0.0584	0.0596	0.0545	0.0558	0.0556	0.0571	3.7
5	13.13-13.33	0.0377	0.0375	0.0380	0.0349	0.0356	0.0354	0.0365	3.7

AROCLOR AVERAGE %RSD = 5.0

FORM VI PCB-1

Y275:00015

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
CX	5.13- 5.33	1.2192	1.0817	1.0669	1.0070	0.9783	0.9559	1.0515	9.1
B	14.43-14.63	1.3661	1.2314	1.1539	1.0208	0.9832	0.9553	1.1184	14.4

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	7.27- 7.47	0.0527	0.0481	0.0455	0.0408	0.0377	0.0349	0.0433	15.5
2	8.08- 8.28	0.1060	0.0978	0.0936	0.0846	0.0805	0.0765	0.0898	12.5
3	8.56- 8.76	0.0277	0.0265	0.0252	0.0224	0.0214	0.0201	0.0239	12.7
4	8.69- 8.89	0.0328	0.0297	0.0279	0.0244	0.0228	0.0212	0.0265	16.7

AROCLOR AVERAGE %RSD = 14.4

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	11.72-11.92	0.0988	0.0908	0.0865	0.0740	0.0722	0.0686	0.0818	14.6
2	12.26-12.46	0.0957	0.0867	0.0839	0.0716	0.0698	0.0661	0.0790	14.6
3	12.54-12.74	0.1858	0.1704	0.1689	0.1485	0.1474	0.1420	0.1605	10.7
4	13.10-13.30	0.1309	0.1214	0.1167	0.1012	0.0989	0.0941	0.1105	13.2

AROCLOR AVERAGE %RSD = 13.3



FORM VI PCB-1

Y275:00011

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET FILE

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.091	5.99-	6.19	0.00772
2	6.298	6.20-	6.40	0.00684
3	6.422	6.32-	6.52	0.02014
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	7.640	7.54-	7.74	0.00792
2	8.165	8.06-	8.26	0.02446
3	8.353	8.25-	8.45	0.01050
4	8.489	8.39-	8.59	0.00763
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	7.641	7.54-	7.74	0.01529
2	8.165	8.06-	8.26	0.04818
3	8.353	8.25-	8.45	0.02047
4	9.326	9.23-	9.43	0.01988
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	8.154	8.05-	8.25	0.03055
2	8.778	8.68-	8.88	0.01755
3	9.321	9.22-	9.42	0.03044
4	9.797	9.70-	9.90	0.03767

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	10.143	10.04-10.24	0.03598
2	10.533	10.43-10.63	0.02488
3	10.675	10.57-10.77	0.04837
4	11.037	10.94-11.14	0.05159
5	11.733	11.63-11.83	0.05112
Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	11.963	11.86-12.06	0.06338
2	12.280	12.18-12.38	0.04986
3	12.652	12.55-12.75	0.13623
4	13.049	12.95-13.15	0.04413
5	13.162	13.06-13.26	0.05810
Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	13.162	13.06-13.26	0.16503
2	13.231	13.13-13.33	0.16508
3	13.595	13.49-13.69	0.14388
4	14.225	14.12-14.32	0.44705

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.065	5.97-	6.17	0.01356
2	6.361	6.26-	6.46	0.00778
3	6.495	6.39-	6.59	0.02335
4	7.386	7.29-	7.49	0.00770
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	6.494	6.39-	6.59	0.01645
2	7.372	7.27-	7.47	0.01890
3	8.189	8.09-	8.29	0.03588
4	8.798	8.70-	8.90	0.01174
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	6.489	6.39-	6.59	0.01564
2	7.366	7.27-	7.47	0.03278
3	8.182	8.08-	8.28	0.06800
4	9.263	9.16-	9.36	0.02490
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	7.356	7.26-	7.46	0.01614
2	8.170	8.07-	8.27	0.04422
3	8.859	8.76-	8.96	0.02396
4	10.206	10.11-	10.31	0.04565

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	9.910	9.81-10.01	0.03100
2	10.100	10.00-10.20	0.03897
3	10.795	10.70-10.90	0.06467
4	11.055	10.96-11.16	0.06573
5	11.821	11.72-11.92	0.04902
Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	12.370	12.27-12.47	0.08614
2	12.643	12.54-12.74	0.17319
3	13.152	13.05-13.25	0.07678
4	13.211	13.11-13.31	0.11751
5	13.853	13.75-13.95	0.06071
Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	13.152	13.05-13.25	0.18571
2	13.215	13.12-13.32	0.17538
3	13.569	13.47-13.67	0.14298
4	14.234	14.13-14.33	0.39624

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1248

Time Analyzed :1706

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	8.16	8.05	8.25	246.1	250.0	-1.6
Aroclor-1248-2	8.78	8.68	8.88	243.3	250.0	-2.7
Aroclor-1248-3	9.32	9.22	9.42	241.0	250.0	-3.6
Aroclor-1248-4	9.80	9.70	9.90	244.8	250.0	-2.1

AVERAGE %D = 2.5

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET FILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :1728

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.63	7.54	7.74	331.9	250.0	32.7
Aroclor-1016-2	8.16	8.07	8.27	302.4	250.0	21.0
Aroclor-1016-3	8.35	8.25	8.45	307.7	250.0	23.1
Aroclor-1016-4	8.78	8.68	8.88	311.2	250.0	24.5

AVERAGE %D = 25.3

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :1728

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	248.0	250.0	-0.8
Aroclor-1260-2	12.28	12.18	12.38	243.3	250.0	-2.7
Aroclor-1260-3	12.65	12.55	12.75	253.7	250.0	1.5
Aroclor-1260-4	13.05	12.95	13.15	242.6	250.0	-3.0
Aroclor-1260-5	13.23	13.13	13.33	230.3	250.0	-7.9

AVERAGE %D = 3.2

FORM VII PCB



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET FILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1254

Time Analyzed :2107

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	10.14	10.04	10.24	263.3	250.0	5.3
Aroclor-1254-2	10.53	10.43	10.63	221.5	250.0	-11.4
Aroclor-1254-3	10.67	10.57	10.77	256.4	250.0	2.6
Aroclor-1254-4	11.04	10.94	11.14	257.1	250.0	2.8
Aroclor-1254-5	11.73	11.63	11.83	262.5	250.0	5.0

AVERAGE %D = 5.4

FORM VII PCB

YZ 75 : 00026

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :2129

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	260.5	250.0	4.2
Aroclor-1016-2	8.17	8.07	8.27	237.2	250.0	-5.1
Aroclor-1016-3	8.35	8.25	8.45	240.2	250.0	-3.9
Aroclor-1016-4	8.78	8.68	8.88	243.9	250.0	-2.4

AVERAGE %D = 3.9

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :2129

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	255.7	250.0	2.3
Aroclor-1260-2	12.28	12.18	12.38	249.6	250.0	-0.2
Aroclor-1260-3	12.65	12.55	12.75	260.9	250.0	4.4
Aroclor-1260-4	13.05	12.95	13.15	248.5	250.0	-0.6
Aroclor-1260-5	13.23	13.13	13.33	237.2	250.0	-5.1

AVERAGE %D = 2.5

FORM VII PCB

YZ 15 1 00026

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	7.64	7.54	7.74	255.9	250.0	2.4
Aroclor-1242-2	8.16	8.06	8.26	241.7	250.0	-3.3
Aroclor-1242-3	8.35	8.25	8.45	239.3	250.0	-4.3
Aroclor-1242-4	9.33	9.23	9.43	241.3	250.0	-3.5

AVERAGE %D = 3.4

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	263.3	250.0	5.3
Aroclor-1016-2	8.16	8.07	8.27	239.8	250.0	-4.1
Aroclor-1016-3	8.35	8.25	8.45	242.1	250.0	-3.1
Aroclor-1016-4	8.78	8.68	8.88	245.9	250.0	-1.6

AVERAGE %D = 3.5

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	263.9	250.0	5.6
Aroclor-1260-2	12.28	12.18	12.38	255.7	250.0	2.3
Aroclor-1260-3	12.65	12.55	12.75	268.4	250.0	7.4
Aroclor-1260-4	13.05	12.95	13.15	254.7	250.0	1.9
Aroclor-1260-5	13.23	13.13	13.33	243.9	250.0	-2.4

AVERAGE %D = 3.9

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET FILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	8.16	8.05	8.25	249.9	250.0	-0.0
Aroclor-1248-2	8.78	8.68	8.88	246.9	250.0	-1.2
Aroclor-1248-3	9.33	9.22	9.42	246.2	250.0	-1.5
Aroclor-1248-4	9.80	9.70	9.90	249.0	250.0	-0.4

AVERAGE %D = 0.8



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET FILE

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	265.8	250.0	6.3
Aroclor-1016-2	8.16	8.07	8.27	241.1	250.0	-3.6
Aroclor-1016-3	8.35	8.25	8.45	244.9	250.0	-2.0
Aroclor-1016-4	8.78	8.68	8.88	248.8	250.0	-0.5

AVERAGE %D = 3.1

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	267.8	250.0	7.1
Aroclor-1260-2	12.28	12.18	12.38	260.0	250.0	4.0
Aroclor-1260-3	12.65	12.55	12.75	272.6	250.0	9.0
Aroclor-1260-4	13.05	12.95	13.15	260.4	250.0	4.2
Aroclor-1260-5	13.23	13.13	13.33	249.7	250.0	-0.1

AVERAGE %D = 4.9

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1248

Time Analyzed :1706

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	7.36	7.26	7.46	300.8	250.0	20.3
Aroclor-1248-2	8.17	8.07	8.27	293.6	250.0	17.4
Aroclor-1248-3	8.86	8.76	8.96	398.4	250.0	59.4
Aroclor-1248-4	10.21	10.11	10.31	299.0	250.0	19.6

AVERAGE %D = 29.2

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :1728

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	293.8	250.0	17.5
Aroclor-1016-2	8.17	8.08	8.28	271.9	250.0	8.8
Aroclor-1016-3	8.65	8.56	8.76	281.5	250.0	12.6
Aroclor-1016-4	8.79	8.69	8.89	277.2	250.0	10.9

AVERAGE %D = 12.4

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :1728

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	206.8	250.0	-17.3
Aroclor-1260-2	12.36	12.26	12.46	217.1	250.0	-13.1
Aroclor-1260-3	12.63	12.54	12.74	220.5	250.0	-11.8
Aroclor-1260-4	13.20	13.10	13.30	210.7	250.0	-15.7

AVERAGE %D = 14.5

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1254

Time Analyzed :2107

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	9.91	9.81	10.01	300.3	250.0	20.1
Aroclor-1254-2	10.10	10.00	10.20	297.0	250.0	18.8
Aroclor-1254-3	10.80	10.70	10.90	272.8	250.0	9.1
Aroclor-1254-4	11.06	10.96	11.16	291.2	250.0	16.5
Aroclor-1254-5	11.82	11.72	11.92	294.5	250.0	17.8

AVERAGE %D = 16.5

FORM VII PCB

## PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Instrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :2129

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.37	7.27	7.47	292.3	250.0	16.9
Aroclor-1016-2	8.18	8.08	8.28	271.7	250.0	8.7
Aroclor-1016-3	8.66	8.56	8.76	281.5	250.0	12.6
Aroclor-1016-4	8.79	8.69	8.89	276.5	250.0	10.6

AVERAGE %D = 12.2

Date Analyzed :09/19/14

Lab Standard ID: AR1660

Time Analyzed :2129

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	212.8	250.0	-14.9
Aroclor-1260-2	12.36	12.26	12.46	217.7	250.0	-12.9
Aroclor-1260-3	12.64	12.54	12.74	227.6	250.0	-9.0
Aroclor-1260-4	13.20	13.10	13.30	213.8	250.0	-14.5

AVERAGE %D = 12.8



FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.49	6.39	6.59	293.4	250.0	17.3
Aroclor-1242-2	7.37	7.27	7.47	295.7	250.0	18.3
Aroclor-1242-3	8.18	8.08	8.28	285.4	250.0	14.2
Aroclor-1242-4	9.26	9.16	9.36	284.0	250.0	13.6

AVERAGE %D = 15.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	293.0	250.0	17.2
Aroclor-1016-2	8.18	8.08	8.28	273.7	250.0	9.5
Aroclor-1016-3	8.65	8.56	8.76	283.3	250.0	13.3
Aroclor-1016-4	8.79	8.69	8.89	278.3	250.0	11.3

AVERAGE %D = 12.8

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	224.2	250.0	-10.3
Aroclor-1260-2	12.36	12.26	12.46	230.3	250.0	-7.9
Aroclor-1260-3	12.64	12.54	12.74	234.7	250.0	-6.1
Aroclor-1260-4	13.20	13.10	13.30	220.5	250.0	-11.8

AVERAGE %D = 9.0

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	7.36	7.26	7.46	302.6	250.0	21.0
Aroclor-1248-2	8.18	8.07	8.27	295.6	250.0	18.2
Aroclor-1248-3	8.86	8.76	8.96	279.2	250.0	11.7
Aroclor-1248-4	10.21	10.11	10.31	305.9	250.0	22.4

AVERAGE %D = 18.3

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	7.36	7.27	7.47	291.0	250.0	16.4
Aroclor-1016-2	8.18	8.08	8.28	271.9	250.0	8.8
Aroclor-1016-3	8.65	8.56	8.76	282.7	250.0	13.1
Aroclor-1016-4	8.79	8.69	8.89	278.2	250.0	11.3

AVERAGE %D = 12.4

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	11.82	11.72	11.92	224.0	250.0	-10.4
Aroclor-1260-2	12.36	12.26	12.46	230.0	250.0	-8.0
Aroclor-1260-3	12.64	12.54	12.74	235.7	250.0	-5.7
Aroclor-1260-4	13.20	13.10	13.30	221.1	250.0	-11.5

AVERAGE %D = 8.9

YZ 75 : 00046

FORM VII PCB

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
ICAL MIDPT					4434421	2.698	4077244	14.794
UPPER LIMIT					8868842	2.798	8154488	14.894
LOWER LIMIT					2217210	2.598	2038622	14.694
					=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		IS1 AREA	RT	IS2 AREA	RT
=====	=====	=====	=====		=====	=====	=====	=====
01	ZZZZZ	ZZZZZ	07/21/14	1626	4373805	2.692	3760196	14.794
02		0.25PPMAR166	07/21/14	1648	4434421	2.698	4077244	14.794
03		0.02PPMAR166	07/21/14	1710	4447124	2.695	3891807	14.794
04		0.05PPMAR166	07/21/14	1732	4441352	2.694	3882218	14.795
05		1PPMAR1660	07/21/14	1754	4414652	2.693	3889578	14.795
06		0.1PPMAR1660	07/21/14	1816	4521857	2.697	3895919	14.795
07		0.5PPMAR1660	07/21/14	1837	4493869	2.693	3945031	14.795
08		AR1242	07/21/14	1859	4438700	2.692	3879215	14.795
09		AR1248	07/21/14	1921	4414839	2.697	3887155	14.795
10		AR1254	07/21/14	1943	4508938	2.695	3960286	14.795
11		AR2162	07/21/14	2005	4494447	2.696	3952241	14.795
12		AR3268	07/21/14	2027	4552734	2.702	4020488	14.795
13	ZZZZZ	ZZZZZ	07/21/14	2049	4445508	2.694	3936762	14.795
14	ZZZZZ	ZZZZZ	07/21/14	2111	4558602	2.696	4045633	14.795
15	ZZZZZ	ZZZZZ	07/21/14	2133	4461342	2.697	4016945	14.795
16	ZZZZZ	ZZZZZ	07/21/14	2154	4529995	2.696	4048326	14.794
17	ZZZZZ	ZZZZZ	07/21/14	2216	4527689	2.697	4039776	14.794
18	ZZZZZ	ZZZZZ	07/21/14	2238	4512425	2.694	4015293	14.794
19		AR1248	09/19/14	1706	5084606	2.698	4863476	14.794
20		AR1660	09/19/14	1728	3601498	2.694	4264893	14.795
21	ZZZZZ	ZZZZZ	09/19/14	1750	4922484	2.698	4576436	14.794
22	ZZZZZ	ZZZZZ	09/19/14	1812	5231575	2.702	4997159	14.793
23	ZZZZZ	ZZZZZ	09/19/14	1834	4980818	2.699	4621050	14.793
24		AR1254	09/19/14	2107	5058352	2.700	4186761	14.794
25		AR1660	09/19/14	2129	4615062	2.702	4106172	14.794
26		AR1242	09/20/14	0108	5417163	2.703	4160853	14.794
27		AR1660	09/20/14	0130	4679826	2.700	4027634	14.794
28	SSP-SOLIDS-2	YZ75A	09/20/14	0235	4828561	2.701	3928957	14.793
29		AR1248	09/20/14	0508	5158208	2.704	4516663	14.793
30		AR1660	09/20/14	0530	4694209	2.701	4060251	14.794

IS1 = 1-Bromo-2-Nitrobenzene  
IS2 = Hexabromobiphenyl

RT Window = RT +/- 0.1 min

YZ 75 : 00048



\* Indicates value outside QC Limits

Page 1 of 1

FORM VIII PCB

YZ 75: 00043

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: YZ75

Project: JOFS SHEET PILE

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
ICAL MIDPT					11221020	3.068	7927142	15.138
UPPER LIMIT					22442040	3.168	15854284	15.238
LOWER LIMIT					5610510	2.968	3963571	15.038
=====					=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
01	ZZZZZ	ZZZZZ	07/21/14	1626	11004730	3.063	7358659	15.138
02		0.25PPMAR166	07/21/14	1648	11221020	3.068	7927142	15.138
03		0.02PPMAR166	07/21/14	1710	11165593	3.066	7592758	15.138
04		0.05PPMAR166	07/21/14	1732	11143504	3.065	7552963	15.139
05		1PPMAR1660	07/21/14	1754	11066585	3.065	7627214	15.138
06		0.1PPMAR1660	07/21/14	1816	11325344	3.067	7687777	15.138
07		0.5PPMAR1660	07/21/14	1837	11352435	3.063	7765451	15.138
08		AR1242	07/21/14	1859	11252651	3.063	7692669	15.138
09		AR1248	07/21/14	1921	11180919	3.066	7655141	15.138
10		AR1254	07/21/14	1943	11293843	3.066	7784494	15.138
11		AR2162	07/21/14	2005	11029310	3.067	7767574	15.137
12		AR3268	07/21/14	2027	11362773	3.070	7876862	15.138
13	ZZZZZ	ZZZZZ	07/21/14	2049	11184271	3.065	7717457	15.139
14	ZZZZZ	ZZZZZ	07/21/14	2111	11369418	3.066	7903232	15.138
15	ZZZZZ	ZZZZZ	07/21/14	2133	11175868	3.067	7850594	15.137
16	ZZZZZ	ZZZZZ	07/21/14	2154	11269109	3.066	7889154	15.137
17	ZZZZZ	ZZZZZ	07/21/14	2216	11177181	3.066	7868041	15.138
18	ZZZZZ	ZZZZZ	07/21/14	2238	11096232	3.064	7812050	15.137
19		AR1248	09/19/14	1706	8620061	3.061	8237403	15.132
20		AR1660	09/19/14	1728	7669744	3.059	7385174	15.133
21	ZZZZZ	ZZZZZ	09/19/14	1750	10737574	3.061	7837014	15.132
22	ZZZZZ	ZZZZZ	09/19/14	1812	11464103	3.066	8620816	15.132
23	ZZZZZ	ZZZZZ	09/19/14	1834	10863124	3.062	7979226	15.133
24		AR1254	09/19/14	2107	8977955	3.065	7089588	15.132
25		AR1660	09/19/14	2129	7664687	3.066	6756979	15.132
26		AR1242	09/20/14	0108	9231366	3.066	7023173	15.132
27		AR1660	09/20/14	0130	7770669	3.065	6609828	15.132
28	SSP-SOLIDS-2	YZ75A	09/20/14	0235	10437953	3.064	7295314	15.132
29		AR1248	09/20/14	0508	8863276	3.067	7646947	15.132
30		AR1660	09/20/14	0530	7902677	3.065	6867926	15.132

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

YZ 75 : 080508

\* Indicates value outside QC Limits

Page 1 of 1

FORM VIII PCB

Y2 75 . 00001

*Analytical Resources, Inc. Report No. ZA03, dated Sept. 26, 2014*

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**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

26 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile**  
**ARI Job No.: ZA03**

Dear Miles:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the final data for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one soil sample on September 12, 2014. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form. The sample was analyzed for PCBs as requested.

There were no anomalies associated with the analysis of this sample.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions regarding these results, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
eFile ZA03

Enclosures

ARI Assigned Number: <b>ZA03</b>	Turn-around Requested: <b>STANDARD</b>
ARI Client Company: <b>JORGENSEN FORGE</b>	Phone:
Client Contact: <b>MILES DYER</b>	
Client Project Name: <b>LFOS SHEET PILE</b>	
Client Project #:	Samplers: <b>20461</b>

Page:		of	
Date:		Ice Present?	Y
No. of Coolers:	1	Cooler Temps:	15.1





**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)  
[www.arilabs.com](http://www.arilabs.com)

[illegible]

dicts by  
BPA 8082-

Analysis Requested	Notes/Comments
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Comments/Special Instructions • CC: DEEGARDNER AT SOUNDEARTH dpgardner@soudearthline.com • LEVEL III • 9 AREOLDS	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature) 	(Signature) 	(Signature)	(Signature)
	Printed Name	Printed Name:	Printed Name	Printed Name:
	DEE GARDNER	A. Volgardsen		
	Company	Company:	Company	Company
	SOUNDEARTH	AREI		
	Date & Time:	Date & Time	Date & Time:	Date & Time:
	09.12.2014 @ 1540	9/12/14 1540		

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



# Cooler Receipt Form

ARI Client Jorgensen Forge  
COC No(s): NA  
Assigned ARI Job No: 2F03

Project Name: JFOS Sheet Pile  
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: \_\_\_\_\_ NA

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of cooler? YES NO  
Were custody papers included with the cooler? YES NO  
Were custody papers properly filled out (ink, signed, etc.) YES NO  
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)  
Time: 1540 15.1  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 910577952

Cooler Accepted by: AV Date: 9/12/14 Time: 1540  
**Complete custody forms and attach all shipping documents**

## Log-In Phase:

Was a temperature blank included in the cooler? YES NO  
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? NA YES NO  
Were all bottles sealed in individual plastic bags? YES NO  
Did all bottles arrive in good condition (unbroken)? YES NO  
Were all bottle labels complete and legible? YES NO  
Did the number of containers listed on COC match with the number of containers received? YES NO  
Did all bottle labels and tags agree with custody papers? YES NO  
Were all bottles used correct for the requested analyses? YES NO  
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO  
Were all VOC vials free of air bubbles? NA YES NO  
Was sufficient amount of sample sent in each bottle? YES NO  
Date VOC Trip Blank was made at ARI: NA  
Was Sample Split by ARI: NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 9/12/14 Time: 1653

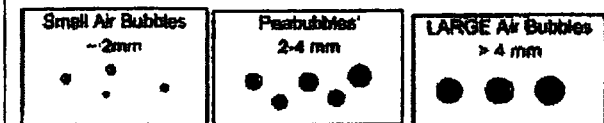
**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

By: \_\_\_\_\_

Date: \_\_\_\_\_



Small → "sm" (< 2 mm)  
Peabubbles → "pb" (2 to < 4 mm)  
Large → "lg" (4 to < 6 mm)  
Headspace → "hs" (> 6 mm)



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

# Cooler Temperature Compliance Form

Cooler#:	1	Temperature(°C):	15.1
Sample ID		Bottle Count	Bottle Type
Sample received above 6°C			

Cooler#:		Temperature(°C):	
Sample ID		Bottle Count	Bottle Type

Cooler#:		Temperature(°C):	
Sample ID		Bottle Count	Bottle Type

Cooler#:		Temperature(°C):	
Sample ID		Bottle Count	Bottle Type

Completed by: AJ Date: 9/12/14 Time: 1633



# Sample ID Cross Reference Report



ARI Job No: ZA03  
Client: Jorgensen Forge  
Project Event: N/A  
Project Name: JFOS Sheet Pile

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. SSP-SOLIDS-20140912	ZA03A	14-18685	Soil	09/12/14 15:00	09/12/14 15:40



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

## **Data Reporting Qualifiers**

**Effective 12/31/13**

### **Inorganic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Duplicate RPD is not within established control limits
- B** Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N** Matrix Spike recovery not within established control limits
- NA** Not Applicable, analyte not spiked
- H** The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L** Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### **Organic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Flagged value is not within established control limits
- B** Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J** Estimated concentration when the value is less than ARI's established reporting limits
- D** The spiked compound was not detected due to sample extract dilution
- E** Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.



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- Q** Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S** Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA** The flagged analyte was not analyzed for
- NR** Spiked compound recovery is not reported due to chromatographic interference
- NS** The flagged analyte was not spiked into the sample
- M** Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y** The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC** Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" (Dioxin/Furan analysis only)
- C** The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P** The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X** Analyte signal includes interference from polychlorinated diphenyl ethers. (Dioxin/Furan analysis only)
- Z** Analyte signal includes interference from the sample matrix or perfluorokerosene ions. (Dioxin/Furan analysis only)



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### **Geotechnical Data**

- A**      The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F**      Samples were frozen prior to particle size determination
- SM**     Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS**     Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W**      Weight of sample in some pipette aliquots was below the level required for accurate weighting

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3546

Sample ID: SSP-SOLIDS-20140912

SAMPLE

Page 1 of 1

Lab Sample ID: ZA03A

LIMS ID: 14-18685

Matrix: Soil

Data Release Authorized:

Reported: 09/26/14

QC Report No: ZA03-Jorgensen Forge

Project: JFOS Sheet Pile

Date Sampled: 09/12/14

Date Received: 09/12/14

Date Extracted: 09/18/14

Date Analyzed: 09/23/14 21:51

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 5.01 g-dry-wt

Final Extract Volume: 2.50 mL

Dilution Factor: 10.0

Silica Gel: Yes

Percent Moisture: 0.6%

CAS Number	Analyte	LOQ	Result
12674-11-2	Aroclor 1016	100	< 100 U
53469-21-9	Aroclor 1242	100	< 100 U
12672-29-6	Aroclor 1248	100	3,600
11097-69-1	Aroclor 1254	100	5,700 E
11096-82-5	Aroclor 1260	100	1,500
11104-28-2	Aroclor 1221	100	< 100 U
11141-16-5	Aroclor 1232	100	< 100 U
37324-23-5	Aroclor 1262	100	< 100 U
11100-14-4	Aroclor 1268	100	< 100 U

Reported in µg/kg (ppb)

## PCB Surrogate Recovery

Decachlorobiphenyl	NR
Tetrachlorometaxylene	95.2%

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3546

Sample ID: SSP-SOLIDS-20140912


DILUTION

Page 1 of 1

Lab Sample ID: ZA03A

LIMS ID: 14-18685

Matrix: Soil

Data Release Authorized: 

Reported: 09/26/14

QC Report No: ZA03-Jorgensen Forge

Project: JFOS Sheet Pile

Date Sampled: 09/12/14

Date Received: 09/12/14

Date Extracted: 09/18/14

Date Analyzed: 09/24/14 08:55

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 5.01 g-dry-wt

Final Extract Volume: 2.50 mL

Dilution Factor: 50.0

Silica Gel: Yes

Percent Moisture: 0.6%

CAS Number	Analyte	LOQ	Result
12674-11-2	Aroclor 1016	500	< 500 U
53469-21-9	Aroclor 1242	500	< 500 U
12672-29-6	Aroclor 1248	500	4,400
11097-69-1	Aroclor 1254	500	7,000
11096-82-5	Aroclor 1260	500	1,900
11104-28-2	Aroclor 1221	500	< 500 U
11141-16-5	Aroclor 1232	500	< 500 U
37324-23-5	Aroclor 1262	500	< 500 U
11100-14-4	Aroclor 1268	500	< 500 U

Reported in µg/kg (ppb)

## PCB Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D


ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3546Sample ID: MB-091814  
METHOD BLANK

Page 1 of 1

Lab Sample ID: MB-091814

LIMS ID: 14-18685

Matrix: Soil

Data Release Authorized: 

Reported: 09/26/14

QC Report No: ZA03-Jorgensen Forge  
Project: JFOS Sheet Pile

Date Sampled: NA

Date Received: NA

Date Extracted: 09/18/14

Date Analyzed: 09/23/14 13:26

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 12.5 g

Final Extract Volume: 2.50 mL

Dilution Factor: 1.00

Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	LOQ	Result
12674-11-2	Aroclor 1016	4.0	< 4.0 U
53469-21-9	Aroclor 1242	4.0	< 4.0 U
12672-29-6	Aroclor 1248	4.0	< 4.0 U
11097-69-1	Aroclor 1254	4.0	< 4.0 U
11096-82-5	Aroclor 1260	4.0	< 4.0 U
11104-28-2	Aroclor 1221	4.0	< 4.0 U
11141-16-5	Aroclor 1232	4.0	< 4.0 U
37324-23-5	Aroclor 1262	4.0	< 4.0 U
11100-14-4	Aroclor 1268	4.0	< 4.0 U

Reported in µg/kg (ppb)

## PCB Surrogate Recovery

Decachlorobiphenyl	80.0%
Tetrachlorometaxylene	69.8%

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Page 1 of 1

Sample ID: LCS-091814

LCS/LCSD

Lab Sample ID: LCS-091814

LIMS ID: 14-18685

Matrix: Soil

Data Release Authorized:

Reported: 09/26/14

QC Report No: ZA03-Jorgensen Forge

Project: JFOS Sheet Pile

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 09/18/14

Sample Amount LCS: 12.5 g-dry-wt

LCSD: 12.5 g-dry-wt

Date Analyzed LCS: 09/23/14 13:46

Final Extract Volume LCS: 2.50 mL

LCSD: 09/23/14 14:06

LCSD: 2.50 mL

Instrument/Analyst LCS: ECD5/JGR

Dilution Factor LCS: 1.00

LCSD: ECD5/JGR

LCSD: 1.00

GPC Cleanup: No

Silica Gel: Yes

Sulfur Cleanup: Yes

Percent Moisture: NA

Acid Cleanup: Yes

Florisil Cleanup: No

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	72.8	101	72.1%	73.4	101	72.7%	0.8%
Aroclor 1260	78.6	101	77.8%	80.4	101	79.6%	2.3%

## PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	74.8%	78.5%
Tetrachlorometaxylene	66.5%	65.8%

Results reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.



**SW8082/PCB SOIL/SOLID/SEDIMENT SURROGATE RECOVERY SUMMARY**

Matrix: Soil

QC Report No: ZA03-Jorgensen Forge  
Project: JFOS Sheet Pile

<u>Client ID</u>	<u>DCBP % REC</u>	<u>DCBP LCL-UCL</u>	<u>TCMX % REC</u>	<u>TCMX LCL-UCL</u>	<u>TOT OUT</u>
MB-091814	80.0%	59-115	69.8%	58-112	0
LCS-091814	74.8%	59-115	66.5%	58-112	0
LCSD-091814	78.5%	59-115	65.8%	58-112	0
SSP-SOLIDS-20140912	NR	47-120	95.2%	53-116	0
SSP-SOLIDS-20140912 DL	D	47-120	D	53-116	0

Microwave (MARS) Control Limits PCBSMI

Prep Method: SW3546

Log Number Range: 14-18685 to 14-18685

4  
PCB METHOD BLANK SUMMARY

BLANK NO.

ZA03MBS1

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET PILE

Lab Sample ID: ZA03MBS1

Lab File ID: 0923A017

Date Extracted: 09/18/14

Matrix: SOLID

Date Analyzed: 09/23/14

Instrument ID: ECD5

Time Analyzed: 1326

GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED =====
01	ZA03LCSS1	ZA03LCSS1	09/23/14
02	ZA03LCSDS1	ZA03LCSDS1	09/23/14
03	SSP-SOLIDS-20140912	ZA03A	09/23/14
04	SSP-SOLIDS-20140912	ZA03A	09/24/14

ALL RUNS ARE DUAL COLUMN

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD5

Calibration Date: 09/05/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
EX	4.28- 4.48	1.2295	1.2484	1.2537	1.2320	1.1646	1.1619	1.2150	3.4
B	12.68-12.88	1.4177	1.2664	1.1646	1.0723	0.9683	0.9566	1.1410	15.7

oclor-1016	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 5.93- 6.13	0.0381	0.0370	0.0359	0.0340	0.0313	0.0307	0.0345	8.8
2 6.34- 6.54	0.1249	0.1191	0.1154	0.1094	0.1013	0.0996	0.1116	9.0
3 6.49- 6.69	0.0563	0.0530	0.0505	0.0472	0.0433	0.0420	0.0487	11.4
4 6.60- 6.80	0.0370	0.0367	0.0352	0.0333	0.0310	0.0304	0.0339	8.3

AROCLOR AVERAGE %RSD = 9.4

roclor-1260	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 9.83-10.03	0.0562	0.0532	0.0510	0.0481	0.0436	0.0428	0.0491	10.8
2 10.14-10.34	0.0526	0.0504	0.0491	0.0466	0.0426	0.0419	0.0472	9.2
3 10.52-10.72	0.1412	0.1395	0.1245	0.1176	0.1073	0.1076	0.1230	12.1
4 10.92-11.12	0.0621	0.0602	0.0594	0.0572	0.0528	0.0525	0.0574	6.9
5 11.10-11.30	0.0399	0.0395	0.0389	0.0372	0.0340	0.0335	0.0372	7.6

AROCLOR AVERAGE %RSD = 9.3

6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD5

Calibration Date: 09/05/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
CX	4.40- 4.60	1.3705	1.3176	1.3321	1.2953	1.2248	1.2017	1.2903	5.0
EB	13.16-13.36	1.3230	1.2539	1.2538	1.1512	1.0505	1.0080	1.1734	10.7

roclor-1016	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
Peak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 6.15- 6.35	0.0605	0.0570	0.0551	0.0509	0.0462	0.0436	0.0522	12.5
2 6.78- 6.98	0.1241	0.1148	0.1121	0.1067	0.0985	0.0946	0.1085	10.0
3 7.16- 7.36	0.0303	0.0286	0.0287	0.0269	0.0257	0.0250	0.0275	7.3
4 7.27- 7.47	0.0364	0.0334	0.0326	0.0300	0.0279	0.0268	0.0312	11.6

AROCLOR AVERAGE %RSD = 10.4

roclor-1260	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
Peak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 10.22-10.42	0.0809	0.0757	0.0731	0.0688	0.0628	0.0601	0.0702	11.3
2 10.67-10.87	0.0852	0.0799	0.0786	0.0755	0.0693	0.0671	0.0759	9.0
3 10.94-11.14	0.1797	0.1666	0.1612	0.1542	0.1411	0.1359	0.1564	10.4
4 11.52-11.72	0.1173	0.1149	0.1111	0.1063	0.0977	0.0948	0.1070	8.6

AROCLOR AVERAGE %RSD = 9.8

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD5

Calibration Date: 09/05/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	3.360	3.26-	3.46	0.00992
2	4.748	4.65-	4.85	0.01493
3	5.031	4.93-	5.13	0.03373
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	3.360	3.26-	3.46	0.00571
2	6.030	5.93-	6.13	0.01420
3	6.589	6.49-	6.69	0.01995
4	7.413	7.31-	7.51	0.02138
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	6.029	5.93-	6.13	0.02842
2	6.437	6.34-	6.54	0.09095
3	6.586	6.49-	6.69	0.03964
4	7.409	7.31-	7.51	0.04179
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	6.437	6.34-	6.54	0.05556
2	7.412	7.31-	7.51	0.05697
3	7.788	7.69-	7.89	0.04762
4	8.078	7.98-	8.18	0.04789

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD5

Calibration Date: 09/05/14

Aroclor-1254				Cal
Peak	RT	RT WIN		Factor
1	8.158	8.06- 8.26		0.07055
2	8.530	8.43- 8.63		0.04658
3	8.666	8.57- 8.77		0.09387
4	9.020	8.92- 9.12		0.09918
5	9.700	9.60- 9.80		0.09613
Aroclor-1262				Cal
Peak	RT	RT WIN		Factor
1	10.246	10.15-10.35		0.05410
2	10.623	10.52-10.72		0.13060
3	11.023	10.92-11.12		0.04489
4	11.206	11.11-11.31		0.06011
5	11.877	11.78-11.98		0.05582
Aroclor-1268				Cal
Peak	RT	RT WIN		Factor
1	11.133	11.03-11.23		0.13651
2	11.205	11.11-11.31		0.13999
3	11.588	11.49-11.69		0.11859
4	12.376	12.28-12.48		0.36134

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD5

Calibration Date: 09/05/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	3.780	3.68-	3.88	0.00893
2	5.184	5.08-	5.28	0.01683
3	5.433	5.33-	5.53	0.00897
4	5.546	5.45-	5.65	0.02821
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	3.781	3.68-	3.88	0.00523
2	5.547	5.45-	5.65	0.01954
3	6.246	6.15-	6.35	0.02343
4	6.877	6.78-	6.98	0.04372
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	6.245	6.14-	6.34	0.04208
2	6.878	6.78-	6.98	0.08637
3	7.259	7.16-	7.36	0.02288
4	8.308	8.21-	8.41	0.02862
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	6.875	6.78-	6.98	0.05212
2	7.777	7.68-	7.88	0.04054
3	8.308	8.21-	8.41	0.04208
4	8.652	8.55-	8.75	0.05353

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD5

Calibration Date: 09/05/14

Aroclor-1254				Cal
Peak	RT	RT WIN		Factor
1	8.368	8.27- 8.47		0.03764
2	8.544	8.44- 8.64		0.04608
3	9.065	8.96- 9.16		0.03440
4	9.215	9.12- 9.32		0.07333
5	10.000	9.90-10.10		0.04116
Aroclor-1262				Cal
Peak	RT	RT WIN		Factor
1	10.403	10.30-10.50		0.04640
2	10.773	10.67-10.87		0.08841
3	11.048	10.95-11.15		0.18056
4	11.629	11.53-11.73		0.12030
5	12.366	12.27-12.47		0.06501
Aroclor-1268				Cal
Peak	RT	RT WIN		Factor
1	11.565	11.47-11.67		0.17656
2	11.632	11.53-11.73		0.17651
3	12.025	11.93-12.13		0.13963
4	12.847	12.75-12.95		0.39228



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1242

Time Analyzed :1246

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.05	5.93	6.13	253.4	250.0	1.4
Aroclor-1242-2	6.45	6.34	6.54	255.1	250.0	2.0
Aroclor-1242-3	6.60	6.49	6.69	254.0	250.0	1.6
Aroclor-1242-4	7.43	7.31	7.51	259.9	250.0	4.0

AVERAGE %D = 2.2

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1306

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.03	5.93	6.13	261.5	250.0	4.6
Aroclor-1016-2	6.44	6.34	6.54	255.9	250.0	2.4
Aroclor-1016-3	6.59	6.49	6.69	258.0	250.0	3.2
Aroclor-1016-4	6.70	6.60	6.80	265.6	250.0	6.2

AVERAGE %D = 4.1

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1306

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	9.93	9.83	10.03	236.4	250.0	-5.4
Aroclor-1260-2	10.25	10.14	10.34	243.9	250.0	-2.4
Aroclor-1260-3	10.62	10.52	10.72	234.3	250.0	-6.3
Aroclor-1260-4	11.02	10.92	11.12	251.9	250.0	0.8
Aroclor-1260-5	11.21	11.10	11.30	239.5	250.0	-4.2

AVERAGE %D = 3.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1254

Time Analyzed :1626

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	8.16	8.06	8.26	236.2	250.0	-5.5
Aroclor-1254-2	8.53	8.43	8.63	243.4	250.0	-2.6
Aroclor-1254-3	8.67	8.57	8.77	246.5	250.0	-1.4
Aroclor-1254-4	9.02	8.92	9.12	246.5	250.0	-1.4
Aroclor-1254-5	9.70	9.60	9.80	244.4	250.0	-2.2

AVERAGE %D = 2.6

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1646

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	6.03	5.93	6.13	256.7	250.0	2.7
Aroclor-1016-2	6.44	6.34	6.54	258.5	250.0	3.4
Aroclor-1016-3	6.59	6.49	6.69	256.3	250.0	2.5
Aroclor-1016-4	6.70	6.60	6.80	264.3	250.0	5.7

AVERAGE %D = 3.6

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1646

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	9.93	9.83	10.03	238.7	250.0	-4.5
Aroclor-1260-2	10.24	10.14	10.34	245.5	250.0	-1.8
Aroclor-1260-3	10.62	10.52	10.72	239.1	250.0	-4.4
Aroclor-1260-4	11.02	10.92	11.12	256.8	250.0	2.7
Aroclor-1260-5	11.20	11.10	11.30	234.3	250.0	-6.3

AVERAGE %D = 3.9

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1248

Time Analyzed :2009

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	6.43	6.34	6.54	251.0	250.0	0.4
Aroclor-1248-2	7.41	7.31	7.51	247.4	250.0	-1.0
Aroclor-1248-3	7.79	7.69	7.89	248.7	250.0	-0.5
Aroclor-1248-4	8.08	7.98	8.18	256.2	250.0	2.5

AVERAGE %D = 1.1



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :2029

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.03	5.93	6.13	258.7	250.0	3.5
Aroclor-1016-2	6.44	6.34	6.54	258.8	250.0	3.5
Aroclor-1016-3	6.59	6.49	6.69	257.9	250.0	3.2
Aroclor-1016-4	6.70	6.60	6.80	265.3	250.0	6.1

AVERAGE %D = 4.1

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :2029

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	9.93	9.83	10.03	252.4	250.0	1.0
Aroclor-1260-2	10.24	10.14	10.34	258.5	250.0	3.4
Aroclor-1260-3	10.62	10.52	10.72	249.2	250.0	-0.3
Aroclor-1260-4	11.02	10.92	11.12	269.7	250.0	7.9
Aroclor-1260-5	11.20	11.10	11.30	246.9	250.0	-1.2

AVERAGE %D = 2.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1242

Time Analyzed :2353

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.03	5.93	6.13	249.1	250.0	-0.4
Aroclor-1242-2	6.44	6.34	6.54	252.4	250.0	1.0
Aroclor-1242-3	6.59	6.49	6.69	249.8	250.0	-0.1
Aroclor-1242-4	7.41	7.31	7.51	246.3	250.0	-1.5

AVERAGE %D = 0.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0014

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.03	5.93	6.13	259.4	250.0	3.8
Aroclor-1016-2	6.44	6.34	6.54	259.2	250.0	3.7
Aroclor-1016-3	6.59	6.49	6.69	256.0	250.0	2.4
Aroclor-1016-4	6.70	6.60	6.80	266.4	250.0	6.5

AVERAGE %D = 4.1

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0014

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	9.93	9.83	10.03	248.9	250.0	-0.4
Aroclor-1260-2	10.24	10.14	10.34	255.6	250.0	2.2
Aroclor-1260-3	10.62	10.52	10.72	246.8	250.0	-1.3
Aroclor-1260-4	11.02	10.92	11.12	268.1	250.0	7.2
Aroclor-1260-5	11.20	11.10	11.30	244.7	250.0	-2.1

AVERAGE %D = 2.6

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1242

Time Analyzed :1246

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.24	6.14	6.34	249.8	250.0	-0.1
Aroclor-1242-2	6.87	6.78	6.98	234.6	250.0	-6.1
Aroclor-1242-3	7.26	7.16	7.36	255.6	250.0	2.2
Aroclor-1242-4	8.31	8.21	8.41	253.3	250.0	1.3

AVERAGE %D = 2.4

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1306

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	6.24	6.15	6.35	259.0	250.0	3.6
Aroclor-1016-2	6.88	6.78	6.98	228.1	250.0	-8.7
Aroclor-1016-3	7.26	7.16	7.36	270.0	250.0	8.0
Aroclor-1016-4	7.37	7.27	7.47	262.5	250.0	5.0

AVERAGE %D = 6.3

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1306

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	10.32	10.22	10.42	241.0	250.0	-3.6
Aroclor-1260-2	10.77	10.67	10.87	248.5	250.0	-0.6
Aroclor-1260-3	11.05	10.94	11.14	256.3	250.0	2.5
Aroclor-1260-4	11.62	11.52	11.72	250.5	250.0	0.2

AVERAGE %D = 1.7

FORM VII PCB



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1254

Time Analyzed :1626

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	8.37	8.27	8.47	248.4	250.0	-0.6
Aroclor-1254-2	8.54	8.44	8.64	240.9	250.0	-3.6
Aroclor-1254-3	9.06	8.96	9.16	244.1	250.0	-2.4
Aroclor-1254-4	9.21	9.12	9.32	227.2	250.0	-9.1
Aroclor-1254-5	10.00	9.90	10.10	235.8	250.0	-5.7

AVERAGE %D = 4.3

FORM VII PCB

2403 00038

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1646

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.24	6.15	6.35	259.7	250.0	3.9
Aroclor-1016-2	6.88	6.78	6.98	228.3	250.0	-8.7
Aroclor-1016-3	7.26	7.16	7.36	270.7	250.0	8.3
Aroclor-1016-4	7.37	7.27	7.47	261.2	250.0	4.5

AVERAGE %D = 6.3

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :1646

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	10.32	10.22	10.42	259.1	250.0	3.6
Aroclor-1260-2	10.77	10.67	10.87	265.2	250.0	6.1
Aroclor-1260-3	11.04	10.94	11.14	258.3	250.0	3.3
Aroclor-1260-4	11.62	11.52	11.72	255.3	250.0	2.1

AVERAGE %D = 3.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1248

Time Analyzed :2009

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	6.87	6.78	6.98	236.8	250.0	-5.3
Aroclor-1248-2	7.78	7.68	7.88	244.0	250.0	-2.4
Aroclor-1248-3	8.31	8.21	8.41	243.1	250.0	-2.7
Aroclor-1248-4	8.65	8.55	8.75	245.5	250.0	-1.8

AVERAGE %D = 3.0

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :2029

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.24	6.15	6.35	259.1	250.0	3.6
Aroclor-1016-2	6.88	6.78	6.98	226.0	250.0	-9.6
Aroclor-1016-3	7.26	7.16	7.36	270.9	250.0	8.4
Aroclor-1016-4	7.37	7.27	7.47	260.8	250.0	4.3

AVERAGE %D = 6.5

Date Analyzed :09/23/14

Lab Standard ID: AR1660

Time Analyzed :2029

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	10.32	10.22	10.42	265.4	250.0	6.2
Aroclor-1260-2	10.77	10.67	10.87	270.6	250.0	8.2
Aroclor-1260-3	11.04	10.94	11.14	262.0	250.0	4.8
Aroclor-1260-4	11.62	11.52	11.72	258.7	250.0	3.5

AVERAGE %D = 5.7

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/23/14

Lab Standard ID: AR1242

Time Analyzed :2353

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.24	6.14	6.34	248.4	250.0	-0.6
Aroclor-1242-2	6.88	6.78	6.98	228.2	250.0	-8.7
Aroclor-1242-3	7.26	7.16	7.36	251.9	250.0	0.8
Aroclor-1242-4	8.31	8.21	8.41	246.8	250.0	-1.3

AVERAGE %D = 2.8



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0014

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.24	6.15	6.35	259.5	250.0	3.8
Aroclor-1016-2	6.88	6.78	6.98	225.3	250.0	-9.9
Aroclor-1016-3	7.26	7.16	7.36	270.1	250.0	8.0
Aroclor-1016-4	7.37	7.27	7.47	260.3	250.0	4.1

AVERAGE %D = 6.4

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0014

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	10.32	10.22	10.42	258.5	250.0	3.4
Aroclor-1260-2	10.77	10.67	10.87	267.1	250.0	6.8
Aroclor-1260-3	11.04	10.94	11.14	259.1	250.0	3.6
Aroclor-1260-4	11.62	11.52	11.72	257.5	250.0	3.0

AVERAGE %D = 4.2

FORM VII PCB

## 7F

**Client: JOGENSEN FORGE**

Project: JFOS SHEET

**Instrument: ECD5**

**Date Analyzed : 09/24/14**

**Time Analyzed :0654**

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1254-1	8.16	8.06	8.26	243.1	250.0	-2.7
Aroclor-1254-2	8.53	8.43	8.63	257.8	250.0	3.1
Aroclor-1254-3	8.67	8.57	8.77	258.4	250.0	3.4
Aroclor-1254-4	9.02	8.92	9.12	261.0	250.0	4.4
Aroclor-1254-5	9.70	9.60	9.80	257.3	250.0	2.9

**AVERAGE %D = 3.3**

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0714

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.03	5.93	6.13	262.1	250.0	4.8
Aroclor-1016-2	6.44	6.34	6.54	261.7	250.0	4.7
Aroclor-1016-3	6.59	6.49	6.69	259.2	250.0	3.7
Aroclor-1016-4	6.70	6.60	6.80	272.2	250.0	8.9

AVERAGE %D = 5.5

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0714

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	9.93	9.83	10.03	248.6	250.0	-0.5
Aroclor-1260-2	10.24	10.14	10.34	257.2	250.0	2.9
Aroclor-1260-3	10.62	10.52	10.72	247.7	250.0	-0.9
Aroclor-1260-4	11.01	10.92	11.12	270.4	250.0	8.2
Aroclor-1260-5	11.20	11.10	11.30	250.8	250.0	0.3

AVERAGE %D = 2.6

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1248

Time Analyzed :0930

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	6.44	6.34	6.54	257.4	250.0	3.0
Aroclor-1248-2	7.42	7.31	7.51	260.3	250.0	4.1
Aroclor-1248-3	7.79	7.69	7.89	269.6	250.0	7.8
Aroclor-1248-4	8.08	7.98	8.18	280.3	250.0	12.1

AVERAGE %D = 6.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0950

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.03	5.93	6.13	262.4	250.0	5.0
Aroclor-1016-2	6.44	6.34	6.54	260.8	250.0	4.3
Aroclor-1016-3	6.59	6.49	6.69	258.4	250.0	3.4
Aroclor-1016-4	6.70	6.60	6.80	269.9	250.0	8.0

AVERAGE %D = 5.2

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0950

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	9.93	9.83	10.03	245.5	250.0	-1.8
Aroclor-1260-2	10.24	10.14	10.34	253.0	250.0	1.2
Aroclor-1260-3	10.62	10.52	10.72	243.5	250.0	-2.6
Aroclor-1260-4	11.02	10.92	11.12	266.4	250.0	6.6
Aroclor-1260-5	11.20	11.10	11.30	248.7	250.0	-0.5

AVERAGE %D = 2.5



FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1254

Time Analyzed :0654

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	8.37	8.27	8.47	261.8	250.0	4.7
Aroclor-1254-2	8.54	8.44	8.64	258.8	250.0	3.5
Aroclor-1254-3	9.06	8.96	9.16	263.9	250.0	5.5
Aroclor-1254-4	9.21	9.12	9.32	237.0	250.0	-5.2
Aroclor-1254-5	10.00	9.90	10.10	262.7	250.0	5.1

AVERAGE %D = 4.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0714

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	6.24	6.15	6.35	256.4	250.0	2.6
Aroclor-1016-2	6.88	6.78	6.98	222.6	250.0	-11.0
Aroclor-1016-3	7.26	7.16	7.36	270.3	250.0	8.1
Aroclor-1016-4	7.37	7.27	7.47	260.5	250.0	4.2

AVERAGE %D = 6.5

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0714

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	10.32	10.22	10.42	249.6	250.0	-0.1
Aroclor-1260-2	10.77	10.67	10.87	260.2	250.0	4.1
Aroclor-1260-3	11.04	10.94	11.14	253.8	250.0	1.5
Aroclor-1260-4	11.62	11.52	11.72	253.7	250.0	1.5

AVERAGE %D = 1.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1248

Time Analyzed :0930

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	6.87	6.78	6.98	233.0	250.0	-6.8
Aroclor-1248-2	7.77	7.68	7.88	253.9	250.0	1.6
Aroclor-1248-3	8.31	8.21	8.41	257.9	250.0	3.2
Aroclor-1248-4	8.65	8.55	8.75	261.1	250.0	4.4

AVERAGE %D = 4.0

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD5

Init. Calib. Date: 09/05/14

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0950

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	6.24	6.15	6.35	254.3	250.0	1.7
Aroclor-1016-2	6.88	6.78	6.98	220.5	250.0	-11.8
Aroclor-1016-3	7.26	7.16	7.36	268.5	250.0	7.4
Aroclor-1016-4	7.37	7.27	7.47	258.1	250.0	3.2

AVERAGE %D = 6.0

Date Analyzed :09/24/14

Lab Standard ID: AR1660

Time Analyzed :0950

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	10.32	10.22	10.42	246.0	250.0	-1.6
Aroclor-1260-2	10.77	10.67	10.87	256.2	250.0	2.5
Aroclor-1260-3	11.04	10.94	11.14	249.5	250.0	-0.2
Aroclor-1260-4	11.62	11.52	11.72	252.8	250.0	1.1

AVERAGE %D = 1.4

FORM VII PCB



FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD5

Init. Calib. Date: 09/05/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
-----					-----	-----	-----	-----
ICAL MIDPT					68336604	2.232	106364042	13.146
UPPER LIMIT					136673208	2.332	212728084	13.246
LOWER LIMIT					34168302	2.132	53182021	13.046
					IS1 AREA	RT	IS2 AREA	RT
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		-----	-----	-----	-----
01	ZZZZZ	ZZZZZ	09/05/14	1719	66968707	2.234	106386762	13.147
02		0.25PPMAR166	09/05/14	1739	68336604	2.232	106364042	13.146
03		0.02PPMAR166	09/05/14	1759	71298607	2.233	109521759	13.147
04		0.05PPMAR166	09/05/14	1819	68896112	2.232	107072369	13.147
05		1PPMAR1660	09/05/14	1840	63047420	2.234	99437101	13.146
06		0.1PPMAR1660	09/05/14	1900	71157892	2.233	110619087	13.147
07		0.5PPMAR1660	09/05/14	1920	69395213	2.234	109684434	13.146
08		AR1242	09/05/14	1941	63503858	2.234	102504510	13.148
09		AR1248	09/05/14	2001	67079622	2.235	107128851	13.148
10		AR1254	09/05/14	2021	67244466	2.234	107315197	13.148
11		AR2162	09/05/14	2042	65778557	2.235	104677392	13.148
12		AR3268	09/05/14	2102	68340586	2.234	105047729	13.148
13	ZZZZZ	ZZZZZ	09/05/14	2122	68199300	2.235	107345555	13.149
14	ZZZZZ	ZZZZZ	09/05/14	2142	65164230	2.235	105169847	13.149
15	ZZZZZ	ZZZZZ	09/05/14	2202	66791388	2.235	106490697	13.150
16	ZZZZZ	ZZZZZ	09/05/14	2223	68094644	2.236	108548317	13.150
17	ZZZZZ	ZZZZZ	09/05/14	2243	67384552	2.235	106975185	13.150
18	ZZZZZ	ZZZZZ	09/05/14	2303	66686755	2.235	107257203	13.149
19		AR1242	09/23/14	1246	69733732	2.243	119634322	13.157
20		AR1660	09/23/14	1306	71757601	2.235	118004784	13.148
21	ZA03MBS1	ZA03MBS1	09/23/14	1326	70855185	2.231	123599535	13.136
22	ZA03LCSS1	ZA03LCSS1	09/23/14	1346	72037997	2.229	118292317	13.136
23	ZA03LCSDS1	ZA03LCSDS1	09/23/14	1406	74902211	2.232	121353431	13.136
24		AR1254	09/23/14	1626	75561069	2.229	121276940	13.142
25		AR1660	09/23/14	1646	71913919	2.232	112800197	13.142
26		AR1248	09/23/14	2009	75068743	2.231	112136936	13.143
27		AR1660	09/23/14	2029	74335495	2.231	110268394	13.141
28	SSP-SOLIDS-2	ZA03A	09/23/14	2151	71591056	2.231	120883320	13.132
29		AR1242	09/23/14	2353	75079466	2.232	120026433	13.142
30		AR1660	09/24/14	0014	75469511	2.232	115871460	13.141
31		AR1254	09/24/14	0654	80808108	2.232	129972592	13.141
32		AR1660	09/24/14	0714	77209306	2.231	123730015	13.139

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

2703:00001

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

Page 1 of 2

FORM VIII PCB

2A03: 50052

## FORM 8

## PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD5

Init. Calib. Date: 09/05/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
ICAL MIDPT					68336604	2.232	106364042	13.146
UPPER LIMIT					136673208	2.332	212728084	13.246
LOWER LIMIT					34168302	2.132	53182021	13.046
					IS1 AREA	RT	IS2 AREA	RT
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		=====	=====	=====	=====
33 SSP-SOLIDS-2	ZA03A	09/24/14	0855		75370994	2.230	136242995	13.134
34	AR1248	09/24/14	0930		79458479	2.237	136160501	13.145
35	AR1660	09/24/14	0950		77626902	2.232	127285314	13.140

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

Page 2 of 2

FORM VIII PCB

2003: 000004

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD5

Init. Calib. Date: 09/05/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

				IS1 AREA	RT	IS2 AREA	RT
ICLAL MIDPT				23298669	2.807	16910731	14.126
UPPER LIMIT				46597338	2.907	33821462	14.226
LOWER LIMIT				11649334	2.707	8455366	14.026
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
01	ZZZZZ	09/05/14	1719	22870418	2.807	16780827	14.125
02	0.25PPMAR166	09/05/14	1739	23298669	2.807	16910731	14.126
03	0.02PPMAR166	09/05/14	1759	24102664	2.806	17533630	14.127
04	0.05PPMAR166	09/05/14	1819	23739112	2.806	17134507	14.127
05	1PPMAR1660	09/05/14	1840	22003780	2.806	16275263	14.126
06	0.1PPMAR1660	09/05/14	1900	24315657	2.806	17710454	14.127
07	0.5PPMAR1660	09/05/14	1920	23976757	2.805	17588689	14.127
08	AR1242	09/05/14	1941	22146455	2.806	16457379	14.127
09	AR1248	09/05/14	2001	23420943	2.807	17303257	14.128
10	AR1254	09/05/14	2021	23460395	2.807	17424705	14.128
11	AR2162	09/05/14	2042	22873448	2.807	16845329	14.127
12	AR3268	09/05/14	2102	23636735	2.807	17491564	14.128
13	ZZZZZ	09/05/14	2122	23692769	2.809	17513904	14.127
14	ZZZZZ	09/05/14	2142	23185763	2.807	16896047	14.128
15	ZZZZZ	09/05/14	2202	23209426	2.807	17104199	14.129
16	ZZZZZ	09/05/14	2223	23652946	2.808	17514371	14.129
17	ZZZZZ	09/05/14	2243	23184128	2.808	17369539	14.127
18	ZZZZZ	09/05/14	2303	22960795	2.807	17355053	14.128
19	AR1242	09/23/14	1246	25150294	2.797	19390170	14.128
20	AR1660	09/23/14	1306	25097012	2.807	19053079	14.127
21	ZA03MBS1	09/23/14	1326	23986850	2.806	20007504	14.122
22	ZA03LCSS1	09/23/14	1346	24673620	2.805	20163785	14.122
23	ZA03LCSDS1	09/23/14	1406	25022589	2.806	20295297	14.122
24	AR1254	09/23/14	1626	25960136	2.804	16511629	14.125
25	AR1660	09/23/14	1646	24784438	2.805	16879673	14.125
26	AR1248	09/23/14	2009	25502456	2.804	15914656	14.124
27	AR1660	09/23/14	2029	25177538	2.805	16458383	14.124
28	SSP-SOLIDS-2	09/23/14	2151	23718820	2.805	17635359	14.119
29	AR1242	09/23/14	2353	25943676	2.805	17005905	14.123
30	AR1660	09/24/14	0014	25522386	2.806	17380740	14.124
31	AR1254	09/24/14	0654	27154162	2.805	19861458	14.124
32	AR1660	09/24/14	0714	26146769	2.803	18866553	14.123

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- 0.1 min

ZA03: 090514

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

Page 1 of 2

FORM VIII PCB

4433: 000000

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JOGENSEN FORGE

ARI Job No.: ZA03

Project: JFOS SHEET

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD5

Init. Calib. Date: 09/05/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

				IS1 AREA	RT	IS2 AREA	RT
=====				=====	=====	=====	=====
ICAL MIDPT				23298669	2.807	16910731	14.126
UPPER LIMIT				46597338	2.907	33821462	14.226
LOWER LIMIT				11649334	2.707	8455366	14.026
				=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
=====	=====	=====	=====	=====	=====	=====	=====
33 SSP-SOLIDS-2	ZA03A	09/24/14	0855	23972994	2.805	19504901	14.121
34	AR1248	09/24/14	0930	27676170	2.801	20348810	14.125
35	AR1660	09/24/14	0950	26580967	2.806	19550217	14.125

IS1 = 1-Bromo-2-Nitrobenzene      RT Window = RT +/- 0.1 min  
IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

Page 2 of 2

FORM VIII PCB

2403 180058



*Analytical Resources, Inc. Report No. ZA04, dated Sept. 26, 2014*

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**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

25 September 2014

Miles Dyer  
Jorgensen Forge Corporation  
8531 East Marginal Way South  
Seattle, WA 98108

**RE: JFOS Sheet Pile**  
**ARI Job No.: ZA04**

Dear Miles:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the final data for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one wipe sample on September 12, 2014. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form. The sample was analyzed for PCBs as requested.

There were no anomalies associated with the analysis of this sample.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions regarding these results, please feel free to contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mark D. Harris  
Project Manager  
206/695-6210  
[markh@arilabs.com](mailto:markh@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Dee Gardner, Sound Earth, Inc.  
eFile ZA04



Enclosures

ARI Assigned Number:	2404	Turn-around Requested:	STANDARD
ARI Client Company:	JORGENSEN FRYE	Phone:	206.702.1100
Client Contact:	MILES DYER		
Client Project Name:	JFOS SHEET PILE		
Client Project #:		Samplers:	DWG1

Page: 1	of 1
Date: 9.12.2014	Ice Present? Y
No. of coolers: 1	Cooler Temps: 15.1



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)  
[www.arilabs.com](http://www.arilabs.com)

Sample ID	Date	Time	Matrix	No Containers	PCBS	EPA 800											
SSP-C-20140912	09.12.14	1455	WIPE	1	X												
Comments/Special Instructions • CC: DEE GARDNER at dgardner@soundearthline.com • LEVEL III • 9 ARCSORS	Relinquished by (Signature) 			Received by (Signature) 			Relinquished by (Signature)			Received by (Signature)							
	Printed Name DEE GARDNER			Printed Name: A. Volgardsen			Printed Name			Printed Name:							
	Company SOUNDEARTH			Company: ARL			Company:			Company:							
	Date & Time 09.12.2014 01540			Date & Time 9/12/14 1540			Date & Time			Date & Time:							

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Analytical Resources, Incorporated  
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client Jorgensen Forge  
COC No(s) NA  
Assigned ARI Job No: XZA04

Project Name JFCS Sheet Pile  
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: NA  
Tracking No: NA

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO  
Were custody papers included with the cooler? YES NO  
Were custody papers properly filled out (ink, signed, etc.) YES NO  
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 15.1  
Time 1540  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 9/12/14 Time: 1540  
**Complete custody forms and attach all shipping documents**

## Log-In Phase:

Was a temperature blank included in the cooler? YES NO  
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: NA  
Was sufficient ice used (if appropriate)? NA YES NO  
Were all bottles sealed in individual plastic bags? YES NO  
Did all bottles arrive in good condition (unbroken)? YES NO  
Were all bottle labels complete and legible? YES NO  
Did the number of containers listed on COC match with the number of containers received? YES NO  
Did all bottle labels and tags agree with custody papers? YES NO  
Were all bottles used correct for the requested analyses? YES NO  
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO  
Were all VOC vials free of air bubbles? NA YES NO  
Was sufficient amount of sample sent in each bottle? YES NO  
Date VOC Trip Blank was made at ARI: NA  
Was Sample Split by ARI: NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

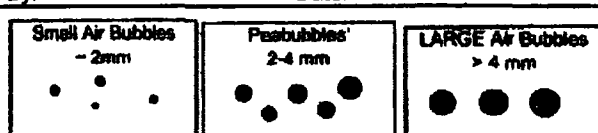
Samples Logged by: AV Date: 9/12/14 Time: 1650

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

By: \_\_\_\_\_ Date: \_\_\_\_\_



Small → "sm" (< 2 mm)  
Peabubbles → "pb" (2 to < 4 mm)  
Large → "lg" (4 to < 6 mm)  
Headspace → "hs" (> 6 mm)

# Sample ID Cross Reference Report

ANALYTICAL  
RESOURCES  
INCORPORATED

ARI Job No: ZA04  
Client: Jorgensen Forge  
Project Event: N/A  
Project Name: JFOS Sheet Pile

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. SSP-C-20140912	ZA04A	14-18684	Wipe	09/12/14 14:55	09/12/14 15:40



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

## **Data Reporting Qualifiers**

**Effective 12/31/13**

### **Inorganic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Duplicate RPD is not within established control limits
- B** Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N** Matrix Spike recovery not within established control limits
- NA** Not Applicable, analyte not spiked
- H** The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L** Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### **Organic Data**

- U** Indicates that the target analyte was not detected at the reported concentration
- \*** Flagged value is not within established control limits
- B** Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J** Estimated concentration when the value is less than ARI's established reporting limits
- D** The spiked compound was not detected due to sample extract dilution
- E** Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.



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- Q** Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S** Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA** The flagged analyte was not analyzed for
- NR** Spiked compound recovery is not reported due to chromatographic interference
- NS** The flagged analyte was not spiked into the sample
- M** Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y** The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC** Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" (Dioxin/Furan analysis only)
- C** The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P** The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X** Analyte signal includes interference from polychlorinated diphenyl ethers. (Dioxin/Furan analysis only)
- Z** Analyte signal includes interference from the sample matrix or perfluorokerosene ions. (Dioxin/Furan analysis only)



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## **Geotechnical Data**

- A**      The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F**      Samples were frozen prior to particle size determination
- SM**    Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS**    Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W**    Weight of sample in some pipette aliquots was below the level required for accurate weighting



## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3580A

Page 1 of 1

Sample ID: SSP-C-20140912

SAMPLE

Lab Sample ID: ZA04A

LIMS ID: 14-18684

Matrix: Wipe

Data Release Authorized: *JB*

Reported: 09/24/14

QC Report No: ZA04-Jorgensen Forge

Project: JFOS Sheet Pile

Date Sampled: 09/12/14

Date Received: 09/12/14

Date Extracted: 09/17/14

Date Analyzed: 09/20/14 04:46

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: No

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	2.0	< 2.0 Y
11097-69-1	Aroclor 1254	1.0	38 E
11096-82-5	Aroclor 1260	1.0	19 E
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U

Reported in Total µg

## PCB Surrogate Recovery

Decachlorobiphenyl	93.8%
Tetrachlorometaxylene	70.8%


ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Extraction Method: SW3580A  
Page 1 of 1

Sample ID: SSP-C-20140912  
DILUTION

Lab Sample ID: ZA04A  
LIMS ID: 14-18684

QC Report No: ZA04-Jorgensen Forge  
Project: JFOS Sheet Pile

Matrix: Wipe

Data Release Authorized:   
Reported: 09/24/14

Date Sampled: 09/12/14  
Date Received: 09/12/14

Date Extracted: 09/17/14  
Date Analyzed: 09/22/14 13:34  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: No  
Acid Cleanup: Yes

Sample Amount: 1.00 Wipe  
Final Extract Volume: 10 mL  
Dilution Factor: 5.00  
Silica Gel: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	5.0	< 5.0 U
53469-21-9	Aroclor 1242	5.0	< 5.0 U
12672-29-6	Aroclor 1248	5.0	< 5.0 U
11097-69-1	Aroclor 1254	5.0	41
11096-82-5	Aroclor 1260	5.0	20
11104-28-2	Aroclor 1221	5.0	< 5.0 U
11141-16-5	Aroclor 1232	5.0	< 5.0 U
37324-23-5	Aroclor 1262	5.0	< 5.0 U
11100-14-4	Aroclor 1268	5.0	< 5.0 U

Reported in Total µg

**PCB Surrogate Recovery**

Decachlorobiphenyl	125%
Tetrachlorometaxylene	73.1%

## ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD Method SW8082A

Extraction Method: SW3580A

Page 1 of 1

Sample ID: MB-091714

METHOD BLANK

Lab Sample ID: MB-091714

LIMS ID: 14-18684

Matrix: Wipe

Data Release Authorized: *[Signature]*

Reported: 09/24/14

QC Report No: ZA04-Jorgensen Forge

Project: JFOS Sheet Pile

Date Sampled: NA

Date Received: NA

Date Extracted: 09/17/14

Date Analyzed: 09/20/14 04:03

Instrument/Analyst: ECD7/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Sample Amount: 1.00 Wipe

Final Extract Volume: 10 mL

Dilution Factor: 1.00

Silica Gel: No

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1.0	< 1.0 U
53469-21-9	Aroclor 1242	1.0	< 1.0 U
12672-29-6	Aroclor 1248	1.0	< 1.0 U
11097-69-1	Aroclor 1254	1.0	< 1.0 U
11096-82-5	Aroclor 1260	1.0	< 1.0 U
11104-28-2	Aroclor 1221	1.0	< 1.0 U
11141-16-5	Aroclor 1232	1.0	< 1.0 U
37324-23-5	Aroclor 1262	1.0	< 1.0 U
11100-14-4	Aroclor 1268	1.0	< 1.0 U


Reported in Total µg

## PCB Surrogate Recovery

Decachlorobiphenyl	82.5%
Tetrachlorometaxylene	67.2%

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD Method SW8082A  
Page 1 of 1Sample ID: LCS-091714  
LAB CONTROLLab Sample ID: LCS-091714  
LIMS ID: 14-18684

Matrix: Wipe

Data Release Authorized: 

Reported: 09/24/14

QC Report No: ZA04-Jorgensen Forge  
Project: JFOS Sheet Pile

Date Sampled: 09/12/14

Date Received: 09/12/14

Date Extracted: 09/17/14  
Date Analyzed: 09/20/14 04:24  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes  
Acid Cleanup: YesSample Amount: 1.00 Wipe  
Final Extract Volume: 10 mL  
Dilution Factor: 1.00  
Silica Gel: No

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	3.94	5.00	78.8%
Aroclor 1260	4.64	5.00	92.8%

## PCB Surrogate Recovery

Decachlorobiphenyl	85.2%
Tetrachlorometaxylene	73.5%

Reported in Total µg

**SW8082/PCB SURROGATE RECOVERY SUMMARY**

Matrix: Wipe

QC Report No: ZA04-Jorgensen Forge  
Project: JFOS Sheet Pile

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-091714	82.5%	67.2%	0
LCS-091714	85.2%	73.5%	0
SSP-C-20140912	93.8%	70.8%	0
SSP-C-20140912 DL	125%	73.1%	0

**LCS/MB LIMITS      QC LIMITS**

(DCBP) = Decachlorobiphenyl	(30-160)	(30-160)
(TCMX) = Tetrachlorometaxylene	(30-160)	(30-160)

Prep Method: SW3580A  
Log Number Range: 14-18684 to 14-18684

4  
PCB METHOD BLANK SUMMARY

BLANK NO.

ZA04MB1

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN FORGE

ARI Job No.: ZA04

Project: JFOS SHEET PILE

Lab Sample ID: ZA04MB1

Lab File ID: 0919A043

Date Extracted: 09/17/14

Matrix: SOLID

Date Analyzed: 09/20/14

Instrument ID: ECD7

Time Analyzed: 0403

GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED =====
01	ZA04LCS1	ZA04LCS1	09/20/14
02	SSP-C-20140912	ZA04A	09/20/14
03	SSP-C-20140912	ZA04A	09/22/14

ALL RUNS ARE DUAL COLUMN

## 8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

## SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	5.54- 5.74	0.7845	0.7534	0.7572	0.7562	0.7662	0.7814	0.7665	1.8
2	14.43-14.63	1.3847	1.2110	1.1615	1.0771	1.0606	1.0558	1.1584	11.0

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	7.54- 7.74	0.0223	0.0208	0.0207	0.0191	0.0182	0.0176	0.0198	9.0
2	8.07- 8.27	0.0659	0.0646	0.0641	0.0610	0.0595	0.0590	0.0623	4.6
3	8.25- 8.45	0.0279	0.0275	0.0272	0.0258	0.0248	0.0242	0.0262	6.0
4	8.68- 8.88	0.0138	0.0136	0.0134	0.0124	0.0115	0.0110	0.0126	9.3

AROCLOR AVERAGE %RSD = 7.2

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
1	11.86-12.06	0.0500	0.0483	0.0483	0.0424	0.0425	0.0413	0.0455	8.4
2	12.18-12.38	0.0463	0.0454	0.0458	0.0407	0.0411	0.0403	0.0432	6.6
3	12.55-12.75	0.1222	0.1211	0.1241	0.1146	0.1186	0.1191	0.1200	2.8
4	12.95-13.15	0.0589	0.0584	0.0596	0.0545	0.0558	0.0556	0.0571	3.7
5	13.13-13.33	0.0377	0.0375	0.0380	0.0349	0.0356	0.0354	0.0365	3.7

AROCLOR AVERAGE %RSD = 5.0

FORM VI PCB-1

2A04 : 00015



6F  
8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
CK	5.13- 5.33	1.2192	1.0817	1.0669	1.0070	0.9783	0.9559	1.0515	9.1
B	14.43-14.63	1.3661	1.2314	1.1539	1.0208	0.9832	0.9553	1.1184	14.4

roclor-1016	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 7.27- 7.47	0.0527	0.0481	0.0455	0.0408	0.0377	0.0349	0.0433	15.5
2 8.08- 8.28	0.1060	0.0978	0.0936	0.0846	0.0805	0.0765	0.0898	12.5
3 8.56- 8.76	0.0277	0.0265	0.0252	0.0224	0.0214	0.0201	0.0239	12.7
4 8.69- 8.89	0.0328	0.0297	0.0279	0.0244	0.0228	0.0212	0.0265	16.7

AROCLOR AVERAGE %RSD = 14.4

roclor-1260	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
ak RT WIN	.02	0.05	0.1	.25	0.5	1.0		R^2
1 11.72-11.92	0.0988	0.0908	0.0865	0.0740	0.0722	0.0686	0.0818	14.6
2 12.26-12.46	0.0957	0.0867	0.0839	0.0716	0.0698	0.0661	0.0790	14.6
3 12.54-12.74	0.1858	0.1704	0.1689	0.1485	0.1474	0.1420	0.1605	10.7
4 13.10-13.30	0.1309	0.1214	0.1167	0.1012	0.0989	0.0941	0.1105	13.2

AROCLOR AVERAGE %RSD = 13.3

FORM VI PCB-1

ZAG4 : 0001 r

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.091	5.99-	6.19	0.00772
2	6.298	6.20-	6.40	0.00684
3	6.422	6.32-	6.52	0.02014
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	7.640	7.54-	7.74	0.00792
2	8.165	8.06-	8.26	0.02446
3	8.353	8.25-	8.45	0.01050
4	8.489	8.39-	8.59	0.00763
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	7.641	7.54-	7.74	0.01529
2	8.165	8.06-	8.26	0.04818
3	8.353	8.25-	8.45	0.02047
4	9.326	9.23-	9.43	0.01988
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	8.154	8.05-	8.25	0.03055
2	8.778	8.68-	8.88	0.01755
3	9.321	9.22-	9.42	0.03044
4	9.797	9.70-	9.90	0.03767

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			Cal
Peak	RT	RT WIN	Factor
1	10.143	10.04-10.24	0.03598
2	10.533	10.43-10.63	0.02488
3	10.675	10.57-10.77	0.04837
4	11.037	10.94-11.14	0.05159
5	11.733	11.63-11.83	0.05112
Aroclor-1262			Cal
Peak	RT	RT WIN	Factor
1	11.963	11.86-12.06	0.06338
2	12.280	12.18-12.38	0.04986
3	12.652	12.55-12.75	0.13623
4	13.049	12.95-13.15	0.04413
5	13.162	13.06-13.26	0.05810
Aroclor-1268			Cal
Peak	RT	RT WIN	Factor
1	13.162	13.06-13.26	0.16503
2	13.231	13.13-13.33	0.16508
3	13.595	13.49-13.69	0.14388
4	14.225	14.12-14.32	0.44705

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1221				Cal
Peak	RT	RT WIN		Factor
1	6.065	5.97-	6.17	0.01356
2	6.361	6.26-	6.46	0.00778
3	6.495	6.39-	6.59	0.02335
4	7.386	7.29-	7.49	0.00770
Aroclor-1232				Cal
Peak	RT	RT WIN		Factor
1	6.494	6.39-	6.59	0.01645
2	7.372	7.27-	7.47	0.01890
3	8.189	8.09-	8.29	0.03588
4	8.798	8.70-	8.90	0.01174
Aroclor-1242				Cal
Peak	RT	RT WIN		Factor
1	6.489	6.39-	6.59	0.01564
2	7.366	7.27-	7.47	0.03278
3	8.182	8.08-	8.28	0.06800
4	9.263	9.16-	9.36	0.02490
Aroclor-1248				Cal
Peak	RT	RT WIN		Factor
1	7.356	7.26-	7.46	0.01614
2	8.170	8.07-	8.27	0.04422
3	8.859	8.76-	8.96	0.02396
4	10.206	10.11-	10.31	0.04565

6G  
8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Instrument ID: ECD7

Calibration Date: 07/21/14

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	9.910	9.81-10.01	0.03100
2	10.100	10.00-10.20	0.03897
3	10.795	10.70-10.90	0.06467
4	11.055	10.96-11.16	0.06573
5	11.821	11.72-11.92	0.04902
Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	12.370	12.27-12.47	0.08614
2	12.643	12.54-12.74	0.17319
3	13.152	13.05-13.25	0.07678
4	13.211	13.11-13.31	0.11751
5	13.853	13.75-13.95	0.06071
Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	13.152	13.05-13.25	0.18571
2	13.215	13.12-13.32	0.17538
3	13.569	13.47-13.67	0.14298
4	14.234	14.13-14.33	0.39624

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	7.64	7.54	7.74	255.9	250.0	2.4
Aroclor-1242-2	8.16	8.06	8.26	241.7	250.0	-3.3
Aroclor-1242-3	8.35	8.25	8.45	239.3	250.0	-4.3
Aroclor-1242-4	9.33	9.23	9.43	241.3	250.0	-3.5

AVERAGE %D = 3.4

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	263.3	250.0	5.3
Aroclor-1016-2	8.16	8.07	8.27	239.8	250.0	-4.1
Aroclor-1016-3	8.35	8.25	8.45	242.1	250.0	-3.1
Aroclor-1016-4	8.78	8.68	8.88	245.9	250.0	-1.6

AVERAGE %D = 3.5

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	263.9	250.0	5.6
Aroclor-1260-2	12.28	12.18	12.38	255.7	250.0	2.3
Aroclor-1260-3	12.65	12.55	12.75	268.4	250.0	7.4
Aroclor-1260-4	13.05	12.95	13.15	254.7	250.0	1.9
Aroclor-1260-5	13.23	13.13	13.33	243.9	250.0	-2.4

AVERAGE %D = 3.9



FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	8.16	8.05	8.25	249.9	250.0	-0.0
Aroclor-1248-2	8.78	8.68	8.88	246.9	250.0	-1.2
Aroclor-1248-3	9.33	9.22	9.42	246.2	250.0	-1.5
Aroclor-1248-4	9.80	9.70	9.90	249.0	250.0	-0.4

AVERAGE %D = 0.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	7.64	7.54	7.74	265.8	250.0	6.3
Aroclor-1016-2	8.16	8.07	8.27	241.1	250.0	-3.6
Aroclor-1016-3	8.35	8.25	8.45	244.9	250.0	-2.0
Aroclor-1016-4	8.78	8.68	8.88	248.8	250.0	-0.5

AVERAGE %D = 3.1

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	11.96	11.86	12.06	267.8	250.0	7.1
Aroclor-1260-2	12.28	12.18	12.38	260.0	250.0	4.0
Aroclor-1260-3	12.65	12.55	12.75	272.6	250.0	9.0
Aroclor-1260-4	13.05	12.95	13.15	260.4	250.0	4.2
Aroclor-1260-5	13.23	13.13	13.33	249.7	250.0	-0.1

AVERAGE %D = 4.9

FORM VII PCB

## PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Instrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1242

Time Analyzed :0108

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1242-1	6.49	6.39	6.59	293.4	250.0	17.3
Aroclor-1242-2	7.37	7.27	7.47	295.7	250.0	18.3
Aroclor-1242-3	8.18	8.08	8.28	285.4	250.0	14.2
Aroclor-1242-4	9.26	9.16	9.36	284.0	250.0	13.6

AVERAGE %D = 15.8

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	293.0	250.0	17.2
Aroclor-1016-2	8.18	8.08	8.28	273.7	250.0	9.5
Aroclor-1016-3	8.65	8.56	8.76	283.3	250.0	13.3
Aroclor-1016-4	8.79	8.69	8.89	278.3	250.0	11.3

AVERAGE %D = 12.8

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0130

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	224.2	250.0	-10.3
Aroclor-1260-2	12.36	12.26	12.46	230.3	250.0	-7.9
Aroclor-1260-3	12.64	12.54	12.74	234.7	250.0	-6.1
Aroclor-1260-4	13.20	13.10	13.30	220.5	250.0	-11.8

AVERAGE %D = 9.0

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1248

Time Analyzed :0508

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	7.36	7.26	7.46	302.6	250.0	21.0
Aroclor-1248-2	8.18	8.07	8.27	295.6	250.0	18.2
Aroclor-1248-3	8.86	8.76	8.96	279.2	250.0	11.7
Aroclor-1248-4	10.21	10.11	10.31	305.9	250.0	22.4

AVERAGE %D = 18.3



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	291.0	250.0	16.4
Aroclor-1016-2	8.18	8.08	8.28	271.9	250.0	8.8
Aroclor-1016-3	8.65	8.56	8.76	282.7	250.0	13.1
Aroclor-1016-4	8.79	8.69	8.89	278.2	250.0	11.3

AVERAGE %D = 12.4

Date Analyzed :09/20/14

Lab Standard ID: AR1660

Time Analyzed :0530

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	224.0	250.0	-10.4
Aroclor-1260-2	12.36	12.26	12.46	230.0	250.0	-8.0
Aroclor-1260-3	12.64	12.54	12.74	235.7	250.0	-5.7
Aroclor-1260-4	13.20	13.10	13.30	221.1	250.0	-11.5

AVERAGE %D = 8.9

FORM VII PCB

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
-----					-----	-----	-----	-----
ICAL MIDPT					4434421	2.698	4077244	14.794
UPPER LIMIT					8868842	2.798	8154488	14.894
LOWER LIMIT					2217210	2.598	2038622	14.694
-----					-----	-----	-----	-----
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		IS1 AREA	RT	IS2 AREA	RT
-----	-----	-----	-----		-----	-----	-----	-----
01	ZZZZZ	ZZZZZ	07/21/14	1626	4373805	2.692	3760196	14.794
02		0.25PPMAR166	07/21/14	1648	4434421	2.698	4077244	14.794
03		0.02PPMAR166	07/21/14	1710	4447124	2.695	3891807	14.794
04		0.05PPMAR166	07/21/14	1732	4441352	2.694	3882218	14.795
05		1PPMAR1660	07/21/14	1754	4414652	2.693	3889578	14.795
06		0.1PPMAR1660	07/21/14	1816	4521857	2.697	3895919	14.795
07		0.5PPMAR1660	07/21/14	1837	4493869	2.693	3945031	14.795
08		AR1242	07/21/14	1859	4438700	2.692	3879215	14.795
09		AR1248	07/21/14	1921	4414839	2.697	3887155	14.795
10		AR1254	07/21/14	1943	4508938	2.695	3960286	14.795
11		AR2162	07/21/14	2005	4494447	2.696	3952241	14.795
12		AR3268	07/21/14	2027	4552734	2.702	4020488	14.795
13	ZZZZZ	ZZZZZ	07/21/14	2049	4445508	2.694	3936762	14.795
14	ZZZZZ	ZZZZZ	07/21/14	2111	4558602	2.696	4045633	14.795
15	ZZZZZ	ZZZZZ	07/21/14	2133	4461342	2.697	4016945	14.795
16	ZZZZZ	ZZZZZ	07/21/14	2154	4529995	2.696	4048326	14.794
17	ZZZZZ	ZZZZZ	07/21/14	2216	4527689	2.697	4039776	14.794
18	ZZZZZ	ZZZZZ	07/21/14	2238	4512425	2.694	4015293	14.794
19		AR1242	09/20/14	0108	5417163	2.703	4160853	14.794
20		AR1660	09/20/14	0130	4679826	2.700	4027634	14.794
21	ZA04MB1	ZA04MB1	09/20/14	0403	5460167	2.701	4556347	14.793
22	ZA04LCS1	ZA04LCS1	09/20/14	0424	5284139	2.702	4416606	14.794
23	SSP-C-201409	ZA04A	09/20/14	0446	5460204	2.703	4583791	14.793
24		AR1248	09/20/14	0508	5158208	2.704	4516663	14.793
25		AR1660	09/20/14	0530	4694209	2.701	4060251	14.794

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

Page 1 of 1

FORM VIII PCB

2A04 00000

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
ICAL MIDPT					11221020	3.068	7927142	15.138
UPPER LIMIT					22442040	3.168	15854284	15.238
LOWER LIMIT					5610510	2.968	3963571	15.038
=====					=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME		IS1 AREA	RT	IS2 AREA	RT
=====					=====	=====	=====	=====
01	ZZZZZ	ZZZZZ	07/21/14	1626	11004730	3.063	7358659	15.138
02		0.25PPMAR166	07/21/14	1648	11221020	3.068	7927142	15.138
03		0.02PPMAR166	07/21/14	1710	11165593	3.066	7592758	15.138
04		0.05PPMAR166	07/21/14	1732	11143504	3.065	7552963	15.139
05		1PPMAR1660	07/21/14	1754	11066585	3.065	7627214	15.138
06		0.1PPMAR1660	07/21/14	1816	11325344	3.067	7687777	15.138
07		0.5PPMAR1660	07/21/14	1837	11352435	3.063	7765451	15.138
08		AR1242	07/21/14	1859	11252651	3.063	7692669	15.138
09		AR1248	07/21/14	1921	11180919	3.066	7655141	15.138
10		AR1254	07/21/14	1943	11293843	3.066	7784494	15.138
11		AR2162	07/21/14	2005	11029310	3.067	7767574	15.137
12		AR3268	07/21/14	2027	11362773	3.070	7876862	15.138
13	ZZZZZ	ZZZZZ	07/21/14	2049	11184271	3.065	7717457	15.139
14	ZZZZZ	ZZZZZ	07/21/14	2111	11369418	3.066	7903232	15.138
15	ZZZZZ	ZZZZZ	07/21/14	2133	11175868	3.067	7850594	15.137
16	ZZZZZ	ZZZZZ	07/21/14	2154	11269109	3.066	7889154	15.137
17	ZZZZZ	ZZZZZ	07/21/14	2216	11177181	3.066	7868041	15.138
18	ZZZZZ	ZZZZZ	07/21/14	2238	11096232	3.064	7812050	15.137
19		AR1242	09/20/14	0108	9231366	3.066	7023173	15.132
20		AR1660	09/20/14	0130	7770669	3.065	6609828	15.132
21	ZA04MB1	ZA04MB1	09/20/14	0403	11876283	3.064	7765174	15.131
22	ZA04LCS1	ZA04LCS1	09/20/14	0424	11298415	3.065	7522486	15.132
23	SSP-C-201409	ZA04A	09/20/14	0446	11803674	3.065	9930475	15.132
24		AR1248	09/20/14	0508	8863276	3.067	7646947	15.132
25		AR1660	09/20/14	0530	7902677	3.065	6867926	15.132

IS1 = 1-Bromo-2-Nitrobenzene  
IS2 = Hexabromobiphenyl

RT Window = RT +/- 0.1 min

\* Indicates value outside QC Limits

ZA04 000036

FORM VIII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1248

Time Analyzed :1228

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	8.15	8.05	8.25	254.1	250.0	1.6
Aroclor-1248-2	8.78	8.68	8.88	251.0	250.0	0.4
Aroclor-1248-3	9.32	9.22	9.42	249.4	250.0	-0.2
Aroclor-1248-4	9.80	9.70	9.90	251.5	250.0	0.6

AVERAGE %D = 0.7

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1250

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.64	7.54	7.74	268.7	250.0	7.5
Aroclor-1016-2	8.16	8.07	8.27	244.8	250.0	-2.1
Aroclor-1016-3	8.35	8.25	8.45	248.3	250.0	-0.7
Aroclor-1016-4	8.78	8.68	8.88	252.5	250.0	1.0

AVERAGE %D = 2.8

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1250

COMPOUND/PEAK NO.	RT	RT WINDOW FROM TO		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.96	11.86	12.06	303.5	250.0	21.4
Aroclor-1260-2	12.28	12.18	12.38	289.8	250.0	15.9
Aroclor-1260-3	12.65	12.55	12.75	302.4	250.0	20.9
Aroclor-1260-4	13.05	12.95	13.15	285.6	250.0	14.2
Aroclor-1260-5	13.23	13.13	13.33	272.4	250.0	9.0

AVERAGE %D = 16.3



FORM VII PCB

2A84 00040

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1254

Time Analyzed :1356

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	10.14	10.04	10.24	275.9	250.0	10.3
Aroclor-1254-2	10.53	10.43	10.63	228.5	250.0	-8.6
Aroclor-1254-3	10.67	10.57	10.77	269.2	250.0	7.7
Aroclor-1254-4	11.04	10.94	11.14	271.9	250.0	8.8
Aroclor-1254-5	11.73	11.63	11.83	262.7	250.0	5.1

AVERAGE %D = 8.1

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1418

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1016-1	7.64	7.54	7.74	268.3	250.0	7.3
Aroclor-1016-2	8.17	8.07	8.27	243.8	250.0	-2.5
Aroclor-1016-3	8.35	8.25	8.45	247.1	250.0	-1.2
Aroclor-1016-4	8.78	8.68	8.88	252.5	250.0	1.0

AVERAGE %D = 3.0

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1418

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
Aroclor-1260-1	11.96	11.86	12.06	298.7	250.0	19.5
Aroclor-1260-2	12.28	12.18	12.38	285.1	250.0	14.0
Aroclor-1260-3	12.65	12.55	12.75	297.9	250.0	19.2
Aroclor-1260-4	13.05	12.95	13.15	281.9	250.0	12.8
Aroclor-1260-5	13.23	13.13	13.33	269.6	250.0	7.8

AVERAGE %D = 14.7

FORM VII PCB

2A04 00044

## PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Instrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1248

Time Analyzed :1228

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1248-1	7.36	7.26	7.46	306.8	250.0	22.7
Aroclor-1248-2	8.17	8.07	8.27	303.3	250.0	21.3
Aroclor-1248-3	8.86	8.76	8.96	287.7	250.0	15.1
Aroclor-1248-4	10.21	10.11	10.31	301.7	250.0	20.7

AVERAGE %D = 19.9

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1250

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.36	7.27	7.47	296.6	250.0	18.6
Aroclor-1016-2	8.18	8.08	8.28	279.4	250.0	11.8
Aroclor-1016-3	8.65	8.56	8.76	289.1	250.0	15.6
Aroclor-1016-4	8.79	8.69	8.89	283.8	250.0	13.5

AVERAGE %D = 14.9

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1250

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	237.5	250.0	-5.0
Aroclor-1260-2	12.36	12.26	12.46	237.9	250.0	-4.8
Aroclor-1260-3	12.63	12.54	12.74	246.8	250.0	-1.3
Aroclor-1260-4	13.20	13.10	13.30	231.0	250.0	-7.6

AVERAGE %D = 4.7

FORM VII PCB



7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1254

Time Analyzed :1356

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
=====	=====	=====	=====	=====	=====	=====
Aroclor-1254-1	9.91	9.81	10.01	315.4	250.0	26.2
Aroclor-1254-2	10.10	10.00	10.20	311.6	250.0	24.6
Aroclor-1254-3	10.80	10.70	10.90	284.3	250.0	13.7
Aroclor-1254-4	11.06	10.96	11.16	308.8	250.0	23.5
Aroclor-1254-5	11.82	11.72	11.92	290.2	250.0	16.1

<-

AVERAGE %D = 20.8

FORM VII PCB

7F  
PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

Intrument: ECD7

Init. Calib. Date: 07/21/14

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1418

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1016-1	7.37	7.27	7.47	294.7	250.0	17.9
Aroclor-1016-2	8.18	8.08	8.28	277.0	250.0	10.8
Aroclor-1016-3	8.66	8.56	8.76	286.9	250.0	14.8
Aroclor-1016-4	8.79	8.69	8.89	282.0	250.0	12.8

AVERAGE %D = 14.1

Date Analyzed :09/22/14

Lab Standard ID: AR1660

Time Analyzed :1418

COMPOUND/PEAK NO.	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
=====	=====	=====	=====	=====	=====	=====
Aroclor-1260-1	11.82	11.72	11.92	249.4	250.0	-0.2
Aroclor-1260-2	12.36	12.26	12.46	250.6	250.0	0.2
Aroclor-1260-3	12.64	12.54	12.74	254.3	250.0	1.7
Aroclor-1260-4	13.20	13.10	13.30	237.6	250.0	-5.0

AVERAGE %D = 1.8

FORM VII PCB

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB5

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

				IS1 AREA	RT	IS2 AREA	RT
=====				=====	=====	=====	=====
ICAL MIDPT				4600852	2.698	3289877	14.795
UPPER LIMIT				9201704	2.798	6579754	14.895
LOWER LIMIT				2300426	2.598	1644938	14.695
				=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
=====	=====	=====	=====	=====	=====	=====	=====
01	AR1248	09/22/14	1228	4600852	2.698	3289877	14.795
02	AR1660	09/22/14	1250	4083904	2.703	3054108	14.794
03	SSP-C-201409 ZA04A	09/22/14	1334	5102808	2.703	3823223	14.794
04	AR1254	09/22/14	1356	4570674	2.701	3500008	14.794
05	AR1660	09/22/14	1418	4116903	2.707	3239228	14.795

IS1 = 1-Bromo-2-Nitrobenzene

RT Window = RT +/- 0.1 min

IS2 = Hexabromobiphenyl

\* Indicates value outside QC Limits

FORM VIII PCB

FORM 8  
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC

Client: JORGENSEN

ARI Job No.: ZA04

Project: JFOS SHEET

GC Column: ZB35

ID: 0.53 (mm)

Instrument ID: ECD7

Init. Calib. Date: 07/21/14

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,  
SAMPLES, AND STANDARDS IS GIVEN BELOW:

				IS1 AREA	RT	IS2 AREA	RT
=====				=====	=====	=====	=====
ICAL MIDPT				7773978	3.059	5890389	15.132
UPPER LIMIT				15547956	3.159	11780778	15.232
LOWER LIMIT				3886989	2.959	2945194	15.032
				=====	=====	=====	=====
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
=====				=====	=====	=====	=====
01	AR1248	09/22/14	1228	7773978	3.059	5890389	15.132
02	AR1660	09/22/14	1250	6817080	3.066	5117289	15.132
03	SSP-C-201409 ZA04A	09/22/14	1334	10607250	3.066	6539926	15.132
04	AR1254	09/22/14	1356	8290732	3.065	5797888	15.132
05	AR1660	09/22/14	1418	6966053	3.069	5353797	15.131

IS1 = 1-Bromo-2-Nitrobenzene  
IS2 = Hexabromobiphenyl

RT Window = RT +/- 0.1 min

\* Indicates value outside QC Limits

Page 1 of 1

FORM VIII PCB

2024:00000



**APPENDIX C**  
**DATA VALIDATION REPORT**

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# Data Validation Report

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**Jorgensen Forge Outfall Site – Sheet Pile Residue  
8531 East Marginal Way South  
Seattle, Washington**

Laboratory Project Number: YY33

*Prepared for:*

**SoundEarth Strategies, Inc.**  
2811 Fairview Ave East, Suite 2000  
Seattle, Washington 98102

*Prepared by:*

**Pyron Environmental, Inc.**  
3530 32<sup>nd</sup> Way, NW  
Olympia, WA 98502

Approved By: \_\_\_\_\_



Mingta Lin, Senior Project Chemist

Date: \_\_\_\_\_

**9/15/2014**

## **ACRONYMS**

<b>%</b>	percent
<b>%D</b>	percent difference
<b>%D<sub>f</sub></b>	percent drift
<b>%R</b>	percent recovery
<b>%RSD</b>	percent relative standard deviation
<b>ARI</b>	Analytical Resources, Inc.
<b>CCV</b>	continuing calibration verification
<b>CF</b>	calibration factor
<b>CLP</b>	U.S. EPA Contract Laboratory Program
<b>COC</b>	chain-of-custody
<b>ECD</b>	electron capture detector
<b>EPA</b>	U.S. Environmental Protection Agency
<b>ICAL</b>	initial calibration
<b>ICV</b>	initial calibration verification
<b>LCS</b>	laboratory control sample
<b>MDL</b>	method detection limit
<b>NFGs</b>	CLP National Functional Guidelines for Data Review (EPA 2008)
<b>PCB</b>	polychlorinated biphenyl
<b>QA/QC</b>	quality assurance/quality control
<b>QAPP</b>	quality assurance project plan
<b>RF</b>	response factor
<b>RL</b>	reporting limit
<b>RPD</b>	relative percent difference
<b>SDG</b>	sample delivery group

## INTRODUCTION

This report presents and discusses findings of the data validation performed on analytical data for wipe samples collected during September 2014 for the referenced project. The laboratory report validated herein was submitted by Analytical Resources, Inc. (AR) in Tukwila, Washington.

A Stage 2B (as defined in EPA 2009) data validation was performed on these laboratory reports. The validation followed the procedures specified in USEPA CLP Functional Guidelines ([NFGs], EPA 2008), with modifications to accommodate project and analytical method requirements. The numerical quality assurance/quality control (QA/QC) criteria applied to the validation were in accordance with those specified in the quality assurance project plan ([QAPP], Floyd|Snider, 2010), as modified in the Basis of Design Report (SoundEarth, 2013) and the current performance-based control limits established by the laboratory (laboratory control limits). Instrument calibration, frequency of QC analyses, and analytical sequence requirements were evaluated against the respective analytical methods.

Validation findings are discussed in each section pertinent to the QC parameter for each type of analysis. Qualified data with applied data qualifiers are summarized in the **Summary** section at the end of this report. Samples and the associated analyses validated herein are summarized as follows:

Field Sample ID	Laboratory Sample ID	Sampling Date	Sample Type	Analysis
				PCB Aroclors
SSP-W-201 40829	YY33A	8/29/14	Wipe	X
SSP-S-201 40829	YY33B	8/29/14	Wipe	X
SSP-N-201 40829	YY33C	8/29/14	Wipe	X

**Notes:**

PCBs – Polychlorinated biphenyl

X – The analysis was requested and performed on the sample.

The analytical parameters requested for the samples, the respective analytical methods, and the analytical laboratories are summarized below:

Parameter	Analytical Method	Analytical Laboratory
PCB Aroclors	SW846 Method 8082A	Analytical Resources, Inc. (ARI) Tukwila, Washington

**Note:** SW846 - USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, December 1996.

## DATA VALIDATION FINDINGS

### 1. PCB Aroclors (EPA Method SW8082A)

#### 1.1 Sample Management and Holding Times

No anomalies were identified in relation to sample preservation, handling, and transport as discussed in Section 1.1.

Wipe samples should be extracted within 14 days of collection. Sample extracts should be analyzed within 40 days of extraction. All samples were extracted and analyzed within the required holding times.

#### 1.2 Initial Calibration

The method requires that (1) a minimum of 5-point calibration be performed using the mixture of Aroclor 1016 and 1260, (2) a single-point calibration be performed for the other five Aroclors to establish calibration factors (CFs) and for Aroclor pattern recognition, (3) at least 3 peaks (preferably 5 peaks) must be chosen for each Aroclor for characterization, (4) the %RSD values of Aroclor 1016 and 1260 CFs must be  $\leq 20\%$ , and (5) if dual column analysis is chosen, both columns should meet the requirements. All ICALs met the requirements.

#### 1.3 Calibration Verification

Calibration verifications were performed at the required frequency, at the beginning and end of analytical sequence within a 12-hour shift or 20 samples, whichever is more frequent. All %D values were within  $\pm 20\%$ .

#### 1.4 Blanks

**Method Blank:** Method blanks were prepared and analyzed as required. PCB Aroclors were not detected at or above the reporting limits (RLs) in the method blank.

#### 1.5 Surrogate Spikes

Surrogate spikes were added to all samples as required by the method. All surrogate spike %R values were within the laboratory control limits.

#### 1.6 Laboratory Control Sample (LCS)

LCS analyses were performed as required by the method. All %R values were within the laboratory control limits.

### **1.7 Method Reporting Limits**

Sample-specific RLs were supported with adequate initial calibration concentrations. All three samples required dilution for the elevated levels of Aroclor 1254 and/or Aroclor 1260; the RLs were elevated accordingly. Aroclor 1254 and Aroclor 1260 results for all samples were to be reported from the dilution analyses, where all other Aroclors reported from the initial analyses.

### **1.8 Overall Assessment of PCB Aroclors Data Usability**

Note that Aroclor 1254 and Aroclor 1260 were present in all samples. Due to the possible overlapping congeners between Aroclor groups, the reported values for these Aroclors might have been over-estimated.

PCB Aroclor data are of known quality and acceptable for use, as qualified.

## SUMMARY

**Table I. Data Affected by QC Anomalies**

Laboratory ID	Sample ID	Analyte	Qualifier	Qualified Reason	Report Section
YY33A YY33B YY33C	SSP-W-201 40829 SSP-S-201 40829 SSP-N-201 40829 (Initial Analysis)	Aroclor 1254 Aroclor 1260	DNR	Analyte concentration exceeded instrument calibration range; report from dilution analysis.	1.7
YY33A YY33B YY33C	SSP-W-201 40829 SSP-S-201 40829 SSP-N-201 40829 (Dilution Analysis)	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1262 Aroclor 1268	DNR	Report from initial analysis in favor of the lower detection limit.	1.7

**Table II. Data Qualifier Definition**

Data Qualifier	Definition
DNR	Do not report. The result was to be reported from an alternative analysis.

## REFERENCES

- USEPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, January 13 2009, EPA 540-R-08-005.
- USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, Office of Superfund Remediation and Technical Innovation, U.S. Environmental Protection Agency, June 2008, USEPA-540-R-08-01.
- USEPA *Test Methods for Evaluating Solid Waste (SW-846). Third Edition and Revised Update IIIA*. Office of Solid Waste and Emergency Response, Washington, D.C. April 1998.
- Jorgensen Forge Outfall Site Seattle, Washington Source Control Action 15-inch and 24-inch Pipes Cleanout Work Plan, Appendix B - Sampling and Analysis Plan/Quality Assurance Project Plan*, Floyd|Snider, December 17, 2010. & Modification (SoundEarth Strategies, Inc., October 2013).